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Mathematics

Grade 10 (General Level)

REVIEW INSTRUMENTS

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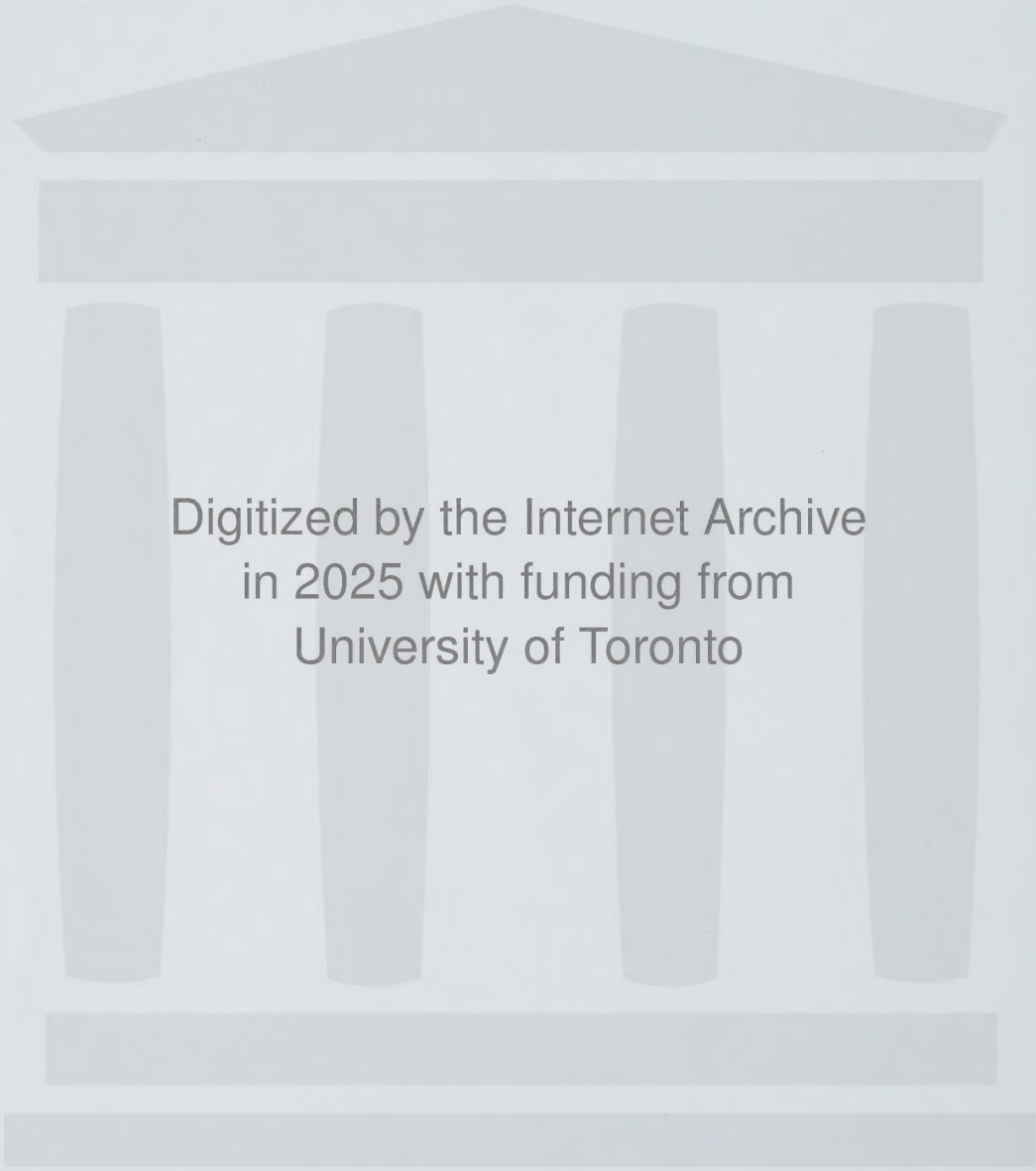
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PRINCIPAL QUESTIONNAIRE

Provincial Reviews Mathematics

Grade 8
Grade 10, General Level
Grade 12, Advanced Level

PROVINCIAL REVIEWS

Ministry of Education
Program Implementation and Review Branch

MATHEMATICS

PRINCIPAL QUESTIONNAIRE

This questionnaire has been designed to collect information for the Provincial Reviews of Mathematics in the Intermediate and Senior Divisions. It will cover Mathematics for Grade 8; Grade 10, General Level; and Grade 12, Advanced Level. You are asked to respond to the questions relating only to the grade(s) in your school that are included in the review.

We have tried to limit the questions to those we consider important in order to minimize the time required to complete the questionnaire. ***It may be necessary for you to consult with teachers or the department head for some questions.***

Please answer these questions directly on the questionnaire. Return it, when completed, by mail directly to the Ministry of Education in the enclosed stamped pre-addressed envelope by ***February 24, 1990.***

No information will be published or made available which will allow the identification of any individual school principal.

If you have questions please call your local Provincial Review Coordinator for the Provincial Reviews at your local regional office of the Ministry of Education.

Thank you for your cooperation.

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PRINCIPAL QUESTIONNAIRE

1989-1990
Provincial Reviews

For questions 1 to 5, write your answers in the boxes provided.

1. **How many students are enrolled in your school?** (Thousands, Hundreds, Tens, Ones) 21–24

2. **How many students are enrolled in Grade 8 Mathematics?** *(Include both semesters if applicable.)* 25–28

3. **How many students are enrolled in the following in your school?** *(Include both semesters if applicable.)*

   Grade 10 Mathematics, Basic, General and Advanced Levels 29–32

   Grade 10 Mathematics, General Level only 33–36

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4. **How many students are enrolled in the following in your school?** *(Include both semesters if applicable.)*

   (Thousands, Hundreds, Tens, Ones)

   Grade 12 Mathematics, Basic, General and Advanced Levels 37–40

   Grade 12 Mathematics, Advanced Level only 41–44

5. **What is the time allocation for mathematics instruction in your school?**

   (Hundreds, Tens, Ones)

   Number of hours per course per year - **Grade 8** 45–47

   Number of hours per course per year - **Grade 10, General Level** 48–50

   Number of hours per course per year - **Grade 12, Advanced Level** 51–53

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Answer the following questions by circling the number that corresponds to your response for the appropriate grade level(s).

6. Which of the following best describes the community served by your school?

Urban/Suburban area	1	
Rural area	2	54
Isolated area	3	

7. Which of the following applies to the scheduling of your mathematics program?

	Full Year	Semestered	Other	
Grade 8	1	2	3	55
Grade 10, General Level	1	2	3	56
Grade 12, Advanced Level	1	2	3	57

	YES	NO	
8a) Is there an Immersion French/Extended French program in your school?	1	2	58

Questions 8a and 8b do not apply to French-language schools.

(If NO, go to Question 9.)

8b) If YES, which of the following mathematics courses are taught in French?

	YES	NO	
Grade 8 Mathematics	1	2	59
Grade 10 Mathematics, General Level	1	2	60
Grade 12 Mathematics, Advanced Level	1	2	61

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9. About how often do teachers in your school meet for the purpose of discussing the teaching of mathematics?

Grade 8

Once every week	1	
Once every two or three weeks	2	
Once every month or second month	3	62
Fewer than 5 times per year	4	
Never	5	

Grade 10, General Level

Once every week	1	
Once every two or three weeks	2	
Once every month or second month	3	63
Fewer than 5 times per year	4	
Never	5	

Grade 12, Advanced Level

Once every week	1	
Once every two or three weeks	2	
Once every month or second month	3	64
Fewer than 5 times per year	4	
Never	5	

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10. How much emphasis is placed on the following planning documents for mathematics?

Grade 8	None	Some	A lot	
Ministry of Education guidelines	1	2	3	65
School board documents	1	2	3	66
School-level planning documents/course of study	1	2	3	67

Grade 10, General Level	None	Some	A lot	
Ministry of Education guidelines	1	2	3	68
School board documents	1	2	3	69
School-level planning documents/course of study	1	2	3	70

Grade 12, Advanced Level	None	Some	A lot	
Ministry of Education guidelines	1	2	3	71
School board documents	1	2	3	72
School-level planning documents/course of study	1	2	3	73

	YES	NO	
11. Does your school board have a procedure for regularly reviewing mathematics programs?	1	2	74

	YES	NO	
12. Does your school have a procedure for regularly reviewing mathematics programs?	1	2	75

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13. When was the mathematics program last reviewed by either the school or the school board?

Grade 8

Has not occurred	1	
Last school year (1988-89)	2	
Two to four years ago	3	76
Five years or more	4	

Grade 10, General Level

Has not occurred	1	
Last school year (1988-89)	2	
Two to four years ago	3	77
Five years or more	4	

Grade 12, Advanced Level

Has not occurred	1	
Last school year (1988-89)	2	
Two to four years ago	3	78
Five years or more	4	

(If a mathematics review has NOT occurred, go to Question 16.)

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14. If a mathematics review was conducted, which of the following components did it include?

Grade 8	YES	NO	
Review of planning documents	1	2	79
Review of teaching practices	1	2	80
Review of evaluation practices in schools	1	2	81
Review of resources	1	2	82
Administration of achievement test	1	2	83

Grade 10, General Level	YES	NO	
Review of planning documents	1	2	84
Review of teaching practices	1	2	85
Review of evaluation practices in schools	1	2	86
Review of resources	1	2	87
Administration of achievement test	1	2	88

Grade 12, Advanced Level	YES	NO	
Review of planning documents	1	2	89
Review of teaching practices	1	2	90
Review of evaluation practices in schools	1	2	91
Review of resources	1	2	92
Administration of achievement test	1	2	93

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15. What changes occurred as a result of the last review of the mathematics program?

Grade 8 There was a change in:	YES	NO	
Teaching objectives	1	2	94
Sequence and timing of programs	1	2	95
Teaching strategies	1	2	96
Student evaluation practices	1	2	97
School resources	1	2	98

Grade 10, General Level There was a change in:	YES	NO	
Teaching objectives	1	2	99
Sequence and timing of programs	1	2	100
Teaching strategies	1	2	101
Student evaluation practices	1	2	102
School resources	1	2	103

Grade 12, Advanced Level There was a change in:	YES	NO	
Teaching objectives	1	2	104
Sequence and timing of programs	1	2	105
Teaching strategies	1	2	106
Student evaluation practices	1	2	107
School resources	1	2	108

16. **Outside of regular professional development days, what activities or courses do teachers in your school engage in for the purpose of professional development for the teaching of mathematics?**

			For Ministry Use Only
Grade 8	YES	NO	
Seminars/workshops	1	2	109
Visiting other classrooms	1	2	110
Conferences	1	2	111
Peer coaching/Job shadowing	1	2	112
Credit courses	1	2	113
Professional Reading	1	2	114
Grade 10, General Level	YES	NO	
Seminars/workshops	1	2	115
Visiting other classrooms	1	2	116
Conferences	1	2	117
Peer coaching/Job shadowing	1	2	118
Credit courses	1	2	119
Professional Reading	1	2	120
Grade 12, Advanced Level	YES	NO	
Seminars/workshops	1	2	121
Visiting other classrooms	1	2	122
Conferences	1	2	123
Peer coaching/Job shadowing	1	2	124
Credit courses	1	2	125
Professional Reading	1	2	126

Thank you for your cooperation in completing this questionnaire.

Please mail it back to the Ministry of Education in the stamped pre-addressed envelope by ***February 24, 1990.***

1989-1990

TEACHER QUESTIONNAIRE

Provincial Review
Mathematics
Grade 10, General Level

PROVINCIAL REVIEWS

Ministry of Education
Program Implementation and Review Branch

MATHEMATICS

TEACHER QUESTIONNAIRE

This questionnaire has been designed to collect information for the Provincial Review of Mathematics in the Senior Division. ***It will cover the Grade 10 Mathematics, General Level program.***

We have tried to limit the questions to those we consider important in order to minimize the time required to complete the questionnaire.

Please answer these questions directly on the questionnaire. Return it, when completed, by mail directly to the Ministry of Education in the enclosed stamped pre-addressed envelope by ***February 24, 1990.***

No information will be published or made available which will allow the identification of any individual teacher.

If you have questions please call the Provincial Review Coordinator for Provincial Reviews at your local regional office of the Ministry of Education.

Thank you for your cooperation.

TEACHER QUESTIONNAIRE

Please answer each question by making a circle around the number that corresponds to your response.

SECTION I: PERSONAL/PROFESSIONAL BACKGROUND

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1. Are you male or female?

Male 1
Female ..... 2 — 21

2. How many years full-time teaching experience do you have? *(Include the current year and round to the nearest year any part-time experiences you have.)*

1 year 1
2 to 5 years 2
6 to 10 years 3
11 or more years ..... 4 — 22

3. How many years have you spent teaching mathematics? *(Include the current year and round to the nearest year any part-time experiences you have.)*

	Elementary	Secondary	
1 year	1	1	
2 to 5 years	2	2	23 Elem
6 to 10 years	3	3	
11 or more years	4	4	24 Sec

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4. How many full-year courses in mathematics methods were included in your teacher education?

No course in mathematics methods 1
Some instruction as part of a general course 2
One full course in mathematics methods 3
Two or more full courses in mathematics methods ..... 4 — 25

5. How many full-year university courses do you have in mathematics?

Zero 0
One 1
Two 2
Three ..... 3 — 26
Four 4
Five or more 5

6. How many courses in measurement and evaluation or testing were included in your teacher training and/or graduate courses?

Zero 0
One 1
Two ..... 2 — 27
Three or more 3

7. Have you received training on the instructional use of computers with respect to the teaching of mathematics?

Yes 1
No ..... 2 — 28

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SECTION II: TEACHING PRACTICES

8. What importance do you place on the instruction of the following topics?

	Not Important	Important	Very Important	
Number Applications	1	2	3	29
Power and Square Roots	1	2	3	30
Applications of Ratio, Rate and Percent	1	2	3	31
Statistics	1	2	3	32
Personal Finance and Banking	1	2	3	33
Borrowing and Saving	1	2	3	34
Polynomials, Formulas and Equations	1	2	3	35
Graphing	1	2	3	36
Linear Equations	1	2	3	37
Geometric Figures and Properties	1	2	3	38
Problem Solving	1	2	3	39

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9. How much time per week outside of class do you think that the average student in your class will take to complete his/her mathematics homework assignments?

Less than 1 hour 1
1 to 2 hours 2
Between 2 and 3 hours 3
3 hours or more 4

40

10. Do your students of mathematics have access to computers?

Yes 1
No (Go to Question 13) 2

41

11. Approximately what percentage of time do your mathematics students spend using computers per week? *(Write the percentage in the space provided.)*

Hundreds Tens Ones

☐☐☐ %

42–44

12. Do you encourage your mathematics students to use computers to do any of the following?

	Yes	No	
To check answers to exercises	1	2	45
To practice new concepts	1	2	46
To learn new concepts and skills	1	2	47
To take tests	1	2	48
As an aid to do projects	1	2	49

For Ministry Use Only

13. In your mathematics classes how often are calculators used?

Often (during every or almost every class)	1	
Occasionally (during about half the lessons)	2	50
Rarely	3	
Never	4	

14. Do you encourage your mathematics students to use calculators to do any of the following?

	Yes	No	
To check answers to exercises	1	2	51
To practice new concepts	1	2	52
To learn new concepts and skills	1	2	53
For use during tests	1	2	54
As an aid to do projects	1	2	55

15. How much emphasis is placed on each of the following in preparing lessons in mathematics?

	Not Available	None	Some	A lot	
Ministry of Education guideline	0	1	2	3	56
Board materials	0	1	2	3	57
Textbook or teacher's edition of textbook	0	1	2	3	58
Materials prepared by yourself or other teachers in your school	0	1	2	3	59
Journals or other teacher reference books	0	1	2	3	60
Commercially-produced supplementary materials	0	1	2	3	61
Materials from teacher education courses	0	1	2	3	62
Materials from your inservice workshops, conferences and seminars	0	1	2	3	63
Suggestions from students	0	1	2	3	64

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16. What percentage of time during the school year do you use each of the following methods or aids for the teaching of mathematics? *(Write the percentages in the spaces provided. They should total 100%.)*

	Hundreds	Tens	Ones		
A chalkboard and/or projector presentation to the class	☐	☐	☐	%	65–67
Teacher demonstration with concrete materials to the class	☐	☐	☐	%	68–70
Students working cooperatively in groups	☐	☐	☐	%	71–73
Students working individually	☐	☐	☐	%	74–76

17. Which of the following materials do you have access to during the teaching of mathematics?

	Yes	No	
Blackline masters (Photocopy masters)	1	2	77
Commercially produced audio-visual materials	1	2	78
Dot paper/Grid paper	1	2	79
Geoboards	1	2	80
Pattern blocks, geometric solids	1	2	81
Geometry set	1	2	82
Student-generated materials	1	2	83
Textbooks	1	2	84

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18. How much emphasis do you place on each of the following in your mathematics class?

	None	Some	A lot	
Blackline masters (photocopy masters)	1	2	3	85
Commercially produced audio-visual materials	1	2	3	86
Dot paper/Grid paper	1	2	3	87
Geoboards	1	2	3	88
Pattern blocks and geometric solids	1	2	3	89
Geometry set	1	2	3	90
Student-generated materials	1	2	3	91
Textbooks	1	2	3	92

19. What percentage of time is devoted to the problem solving process?
(Write the percentage in the space provided.)

Hundreds ☐ Tens ☐ Ones ☐ % 93-95

20. Which of the following best describes the problem solving component of your mathematics program?

I teach problem solving as a separate unit. 1

I integrate problem solving into the mathematics programs throughout the year. 2 96

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21. What approaches do you use in teaching problem solving?

	Yes	No	
I provide students with many puzzles and problems to solve.	1	2	97
I provide students with a systematic approach to solving problems. (e.g. understand, plan, solve, look back.)	1	2	98
I teach specific strategies for solving problems. (e.g. guess and check, make a list, draw diagram, etc.)	1	2	99
I encourage students to develop their own strategies.	1	2	100

22. How are the solutions to problems in mathematics dealt with by the students?

	Yes	No	
Students discuss their solutions with each other.	1	2	101
Students report their results to the whole class.	1	2	102
Students write up their solutions or the results of their discoveries and present them to the teacher.	1	2	103

23. Do you use diagnostic pre-tests in your mathematics class?

Never 1

Sometimes 2 104

Often 3

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24. On average, how often do you assess your students' learning of mathematics skills and concepts?

Less than once per month	1	
Once per month	2	
Twice per month	3	105
Three times per month	4	
Four times per month or more	5	

25. In mathematics, what percent of the students' final mark is determined through the use of the following: *(Write the percentage in the space provided. The total for the grade should add up to 100%.)*

	Hundreds	Tens	Ones		
Quizzes or short tests				%	106–108
Cumulative tests or end of unit tests				%	109–111
Formal examinations				%	112–114
Observation of student behaviour				%	115–117
Peer/Self evaluation				%	118–120
Others (Projects, assignments, etc.)				%	121–123

Thank you for your cooperation in completing this questionnaire. Please mail it back to the Ministry of Education in the stamped pre-addressed envelope by **February 24, 1990.**

STUDENT QUESTIONNAIRE

MATHEMATICS

GRADE 10

GENERAL LEVEL

PROVINCIAL REVIEWS

Ministry of Education
Program Implementation and Review Branch

INSTRUCTIONS

1. Make sure your Student Answer Sheet is turned to the side marked **PART A: STUDENT INFORMATION.** Use an ***HB pencil*** to fill out your answer sheet. Be sure you have an ***eraser*** available as well.

   Check to make sure you have filled in your **name**, the name of **your school board**, **your school**, and **your mathematics teacher** at the top of the Student Answer Sheet. Also make sure you have filled in all the appropriate bubbles at the top of the Student Answer Sheet.

2. Do the sample question below. To record your answer, fill in the correct bubble under the word **EXAMPLE** on your answer sheet.

   EXAMPLE What year is this?

   A) 1989
   B) 1990
   C) 1991
   D) 1992

   You should have filled in bubble **B** on your answer sheet since this is 1990.

3. There are two parts to this questionnaire:

   Part A (Student Information) includes questions about yourself, the things you do and how you feel about mathematics.

   Part B (No Calculator Questions) includes mathematics questions that you will answer without using a calculator.

   You will be given all the time you need to complete the entire questionnaire.

4. Read each question in the questionnaire carefully.

   Next to each question number on your answer sheet, fill in the bubble that contains the letter corresponding to your response.

   Use an ***HB pencil***. Erase completely any responses you want to change.

   Record all your answers on the Student Answer Sheet.

   If you have any questions about what you are supposed to do, ask your teacher.

PART A: STUDENT INFORMATION

Record your responses to the following questions in the STUDENT INFORMATION Section of your answer sheet.

1. **Are you male or female?**

   A) Male.
   B) Female.

2. **In which year were you born?**

   A) 1972 or before.
   B) 1973.
   C) 1974.
   D) 1975.
   E) 1976 or after.

3. **What language do you most often speak at home?**

   A) English.
   B) French.
   C) Other.

4. **On average how much time out of school do you spend watching TV programs each day?**

   A) None at all.
   B) Up to 1 hour.
   C) Between 1 and 2 hours.
   D) Between 2 and 3 hours.
   E) More than 3 hours.

5. **About how much time do you spend on mathematics homework each week?**

   A) I don't do any mathematics homework.
   A) Less than 1 hour.
   B) One to 2 hours.
   C) More than 2 hours.

6. **How often do you get help with mathematics from someone in your family?**

   A) Never or almost never.
   B) Occasionally.
   C) Often.

7. **Which of the following describes how the mathematics program in your school is organized?**

   A) Full-year.
   B) Semestered.
   C) Other.

DO YOU LIKE DOING MATHEMATICS QUESTIONS THAT DEAL WITH:

8. **Number Applications?**

   A) Yes.
   B) No.
   C) I'm not sure.
   D) We don't do these kinds of questions.

9. **Powers and Square Roots?**

   A) Yes.
   B) No.
   C) I'm not sure.
   D) We don't do these kinds of questions.

DO YOU LIKE DOING MATHEMATICS QUESTIONS THAT DEAL WITH:

10. Applications of Ratio, Rate and Percent?

A) Yes.
B) No.
C) I'm not sure.
D) We don't do these kinds of questions.

11. Statistics?

A) Yes.
B) No.
C) I'm not sure.
D) We don't do these kinds of questions.

12. Budgeting and Personal Banking?

A) Yes.
B) No.
C) I'm not sure.
D) We don't do these kinds of questions.

13. Interest Rate?

A) Yes.
B) No.
C) I'm not sure.
D) We don't do these kinds of questions.

14. Polynomials, Formulas and Solving Equations?

A) Yes.
B) No.
C) I'm not sure.
D) We don't do these kinds of questions.

15. Drawing Graphs from Tables?

A) Yes.
B) No.
C) I'm not sure.
D) We do not do these kinds of questions.

DO YOU LIKE DOING MATHEMATICS QUESTIONS THAT DEAL WITH:

16. Graphs of Linear Equations?

A) Yes.
B) No.
C) I'm not sure.
D) We do not do these kinds of questions.

17. Geometric Figures and Properties?

A) Yes.
B) No.
C) I'm not sure.
D) We do not do these kinds of questions.

18. Problem Solving?

A) Yes.
B) No.
C) I'm not sure.
D) We do not do these kinds of questions.

The following questions ask about what you and your class do when you are learning mathematics. Think about what happens in your mathematics class.

19. How often do you do mathematics at the board or on the overhead projector?

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

20. How often is mathematics presented to the whole class as a group?

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

21. **How often do you do mathematics in small groups?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

22. **How often do you do mathematics on your own in class?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

23. **How often do you do projects on mathematics topics?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

24. **How often do you do projects in other subjects that involve the use of mathematics?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

25. **How often do you write tests or quizzes in mathematics?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

26. **How often do you use a calculator to do mathematics in class?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never.

27. **How often do you use a computer to do mathematics in class?**

A) Almost every day.
B) Once a week or so.
C) Only once in a while.
D) Never

28. **Do you use a calculator at home?**

A) No.
B) Yes.

29. **Do you have a computer at home?**

A) No
B) Yes, but I don't use it.
C) Yes, I use it but not for mathematics schoolwork.
D) Yes, I use it for mathematics schoolwork only.
E) Yes, I use it for mathematics schoolwork and other things.

The following questions ask how you feel about the mathematics you are learning in school.

30. **Do you think mathematics is:**

A) more for males than females?
B) more for females than males?
C) for everyone equally?

31. **I like mathematics.**

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

32. Mathematics helps me outside of school.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

33. Learning mathematics is mostly memorizing.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

34. I am good at mathematics.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

35. It is important to know mathematics in order to get a good job.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

36. Mathematics is difficult for me.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

37. When I do problems in mathematics, I usually have trouble understanding what the sentences say.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

38. There are usually <u>different</u> ways to solve mathematical problems.

A) Strongly agree.
B) Agree.
C) Not sure.
D) Disagree.
E) Strongly disagree.

WHEN YOU DON'T UNDERSTAND A PROBLEM IN MATHEMATICS DO YOU:

39. Try different ways to solve it on your own?

A) Often.
B) Sometimes.
C) Never.

40. Ask another student for help?

A) Often.
B) Sometimes.
C) Never.

41. Ask your teacher for help?

A) Often.
B) Sometimes
C) Never.

42. Wait and ask someone at home?

A) Often.
B) Sometimes.
C) Never.

43. Just give up?

A) Often.
B) Sometimes.
C) Never.

Leave Questions 44 to 48 blank on your answer sheet.

You have reached the end of the **Student Information** section.

Make sure you have answered all the questions up to **Number 43** on your answer sheet. Be sure you have erased carefully all the answers you have changed.

Now begin **PART B**.

PART B: NO CALCULATOR QUESTIONS

Find the No Calculator Questions section on your answer sheet.

Read each of the following questions carefully.

Next to each question number on your answer sheet, fill in the bubble that contains the letter corresponding to your answer.

Use an HB pencil.

Make sure you begin with Question 51 on your answer sheet.

51. Calculate $\frac{3}{4} \times -\frac{2}{3}$.

A) -2

B) $-\frac{1}{2}$

C) $-\frac{5}{7}$

D) $\frac{1}{2}$

52 Calculate $-\frac{3}{4} + \frac{1}{2}$.

A) $-\frac{3}{2}$

B) $-\frac{3}{8}$

C) $\frac{3}{8}$

D) $\frac{3}{2}$

53. Calculate $\frac{2}{3} - \frac{5}{4}$.

A) $-\frac{23}{12}$

B) $-\frac{7}{12}$

C) $-\frac{3}{12}$

D) $\frac{7}{12}$

54. 2.35 is the answer to:

A) $235 \div 10$

B) $2.35 \div 10$

C) $23.5 \div 10^2$

D) $235 \div 10^2$

55. $23.857\,6 \times 10^3$ is:

A) 0.023 857 6

B) 23.857 600 0

C) 23 857.6

D) 238 576 000

56. 25.69 is the answer to:

A) $2\,569 \times 100$

B) 256.9×100

C) 2.569×0.1

D) 256.9×0.1

57. A contractor charges \$9.85/m^2 to pave a parking lot. The cost of paving a 1 000 m^2 parking lot is:

A) \$985

B) \$9 850

C) \$98 500

D) \$985 000

58. During the first day of their vacation, Joachim's family drove a total of 7 h. The digits on their trip distance indicator were:

3	8	5	7

The most probable distance they drove is:

A) 3.9 km

B) 38.6 km

C) 385.7 km

D) 3 857 km

YOU HAVE NOW FINISHED.

Make sure you have answered all the questions in **Part B** on your answer sheet and that you have erased carefully all the answers you have changed.

Please raise your hand to let the teacher know you have finished.

Thank you for your participation.

STUDENT ASSESSMENT BOOKLET

MATHEMATICS

Grade 10 Mathematics, General Level

1

PROVINCIAL REVIEWS

Program Implementation & Review Branch
Ministry of Education

INSTRUCTIONS

1. Make sure your *Mathematics Student Answer Sheet* is turned to side 1 (title at top of page). Use an ***HB pencil*** to fill out your answer sheet.

   Be sure you have the following materials available:

   - eraser
   - ruler
   - calculator

2. Fill in your **name**, the name of **your school board**, **your school**, and **your mathematics teacher** at the top of the *Mathematics Student Answer Sheet*. Also make sure you have filled in all the appropriate bubbles at the top of the sheet.

3. Do the sample question below. To record your answer, fill in the correct bubble under the word **EXAMPLE** on your answer sheet.

   EXAMPLE What year is this?

   A) 1989
   B) 1990
   C) 1991
   D) 1992

   You should have filled in bubble **B** on your answer sheet since this is 1990.

4. There are 33 questions in this **Student Assessment Booklet**. Some are multiple-choice and will be answered on the *Mathematics Student Answer Sheet*. Others are open-ended and will be answered directly in this booklet.

   You will be given all the time you need to complete the entire booklet.

5. Read each question in the booklet carefully. Next to each question number on your answer sheet, fill in the bubble that contains the letter corresponding to your response. Erase completely any responses you want to change.

6. On the front cover you will find a booklet number. On your answer sheet, find the box that corresponds to your booklet number. Be sure to record your answers in this box.

   If you have any questions about what you are supposed to do, ask your teacher.

1. A monthly magazine costs $3.95 at the news-stand. You can buy an annual subscription (12 issues) for $33.00. If you intend to buy the next 12 issues, the amount you would save by buying the subscription is:

   A) $14.40

   B) $29.05

   C) $47.40

   D) $80.40

2. Clarke and Sabrina took a taxi back from the formal. The following table compares the distance (**d**) in kilometres and cost (**c**) in dollars.

d (km)	1	2	3	4	5	6	7
c ($)	$1.30	$1.50	$1.70	$1.90	$2.10		$2.50

The cost for a trip of 6 km is:

   A) $2.20

   B) $2.30

   C) $2.40

   D) $3.40

3. The expression 5^3 means:

   A) 5×3

   B) $5 + 5 + 5$

   C) $5 \times 5 \times 5$

   D) $3 \times 3 \times 3 \times 3 \times 3$

4. The expression $(3^2)^5$ equals:

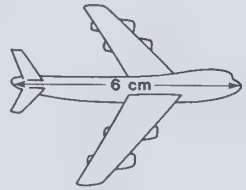
   A) 3^{10}

   B) 3^7

   C) 6^5

   D) 15^{10}

5. This is a scale drawing of a jumbo jet.



SCALE: 1 cm REPRESENTS 12 m

The actual length of the jet, in metres, is:

   A) 6

   B) 12

   C) 50

   D) 72

6. A record album that sells for $11.00 at the regular price is on sale for $8.80. The percentage discount off the regular price is:

   A) 80 %

   B) 25 %

   C) 22 %

   D) 20 %

7. At a school dance, the ratio of the number of girls to the number of boys is 3:2. Which one of the following statements is true?

   A) There are 3 times as many girls as boys.

   B) There are 3 boys for every 2 girls.

   C) There are 3 girls for every 2 boys.

   D) The number of girls is one more than the number of boys.

8. Pat is running for the office of school president. Pat plans to conduct a survey to ask students whom they are planning to vote for in the upcoming election.

   The most appropriate method of conducting the poll is to:

   A) ask 12 people in her homeroom.

   B) ask all students in Grade 12.

   C) ask every tenth student on the school list.

   D) ask her friends.

9. Nine students ran a 100-m race. Their times in seconds were:

   15, 10, 12, 17, 17, 15, 13, 12, 15

   The mode is:

   A) 17

   B) 15

   C) 14

   D) 10

10. Jennifer's bank charges $0.35 for each cheque she writes on her chequing account. However, there is no charge for withdrawals or deposits.

DATE M D	DESCRIPTION	DEBITS	CREDITS	BALANCE
05 04	Balance forward			315.84
05 08	Cheque # 135	75.49		249.35
05 10	Withdrawal	50.00		190.35
05 15	Deposit		529.07	
05 15	Withdrawal	200.00		519.42
05 24	Cheque # 138	42.32		477.10
05 30	Cheque # 136	69.55		407.55
05 31	Service Charge			

   The service charge should be:

   A) $0.35

   B) $1.05

   C) $1.75

   D) $2.10

11. Which of the following is a type of credit buying?

    A) Depositing money in a bank account.

    B) Paying for a pair of shoes with cash.

    C) Paying for tickets for a concert with a cheque.

    D) Paying for clothes with a credit card.

12. Jan borrowed $648 to buy a Mountain Bike. The bank charged $120 in interest. The total amount is paid off in one year. The monthly payment is:

    A) $10

    B) $44

    C) $54

    D) $64

13. Todd has an outstanding balance of $350 on his credit card account. The interest charge is 2 % per month. The amount of interest that will be charged for one month is:

    A) $0.58

    B) $7.00

    C) $84.00

    D) $357.00

14. The table below shows the relationship between the cost **(c)** and the number ***(n)*** of student cards.

n	c
1	5
2	10
3	15
4	20

The formula that relates the cost **(c)** and the number ***(n)*** of student cards is:

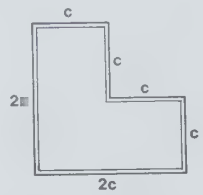
A) $c = 5n$

B) $c = n$

C) $c = 4n$

D) $c = \frac{n}{5}$

15. A ceiling molding is installed in the L-shaped room pictured below.



An expression for the total length of ceiling molding is:

A) 8c

B) 6c

C) 5c

D) 4c

16. The expression $(2x)(-3y)$ is equal to:

A) $-xy$

B) $-5xy$

C) $-6xy$

D) $-x^2y^3$

17. $\mathbf{E} = \mathbf{IR}$ is an important formula in electricity.

E represents the voltage in volts.
I represents the current in amperes.
R represents the resistance in ohms.

If **E** is 600 volts and **R** is 400 ohms, the current **I** is:

A) 1 000 amperes

B) 200 amperes

C) 1.5 amperes

D) 0.7 amperes

18. A marathon cyclist travels around a route four times. The total distance travelled is 461.76 km. Let the distance of one lap around the route be **d** km.

The equation that could be used to determine **d** is:

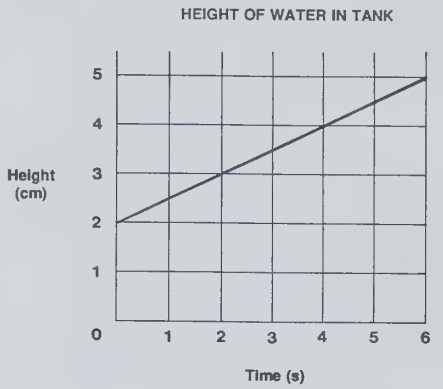
A) $\mathbf{d} + 461.76 = 4\mathbf{d}$

B) $2\mathbf{d} = 461.76$

C) $\mathbf{d} = 4 \times 461.76$

D) $4\mathbf{d} = 461.76$

19. A tank is being filled with water. The graph below shows the height of water in the tank for different times.



At 5 s, the height of water in the tank is:

A) 6 cm

B) 5.5 cm

C) 5 cm

D) 4.5 cm

20. The chart below shows the number of copies (**n**) produced by a copying machine in t minutes.

Time in Minutes (t)	Number of copies (**n**)
1	100
2	200
3	300

The formula which relates the number of copies (**n**) to the time in minutes (**t**) is:

A) $n = t - 100$

B) $n = 100 + t$

C) $n = \frac{t}{100}$

D) $n = 100t$

21. When $x = 1$, the ordered pair (x,y) that makes the equation $y = -3x + 1$ true is:

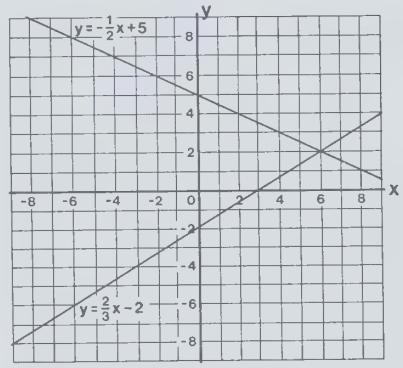
A) (1,0)

B) (1,–2)

C) (–2,1)

D) (0,1)

22. Two straight lines are shown on the graph below.



The point of intersection of the two lines $y = -\frac{1}{2}x + 5$ and $y = \frac{2}{3}x - 2$ is:

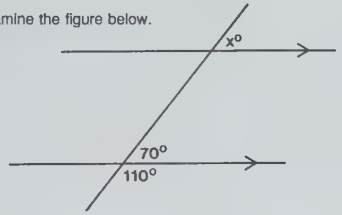
A) (3,0)

B) (0,5)

C) (6,2)

D) (2,6)

23. Examine the figure below.



The value of **x** is:

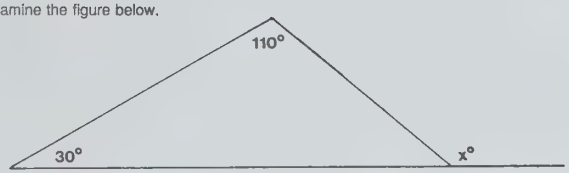
A) 20°

B) 40°

C) 70°

D) 110°

24. Examine the figure below.



The value of **x** is:

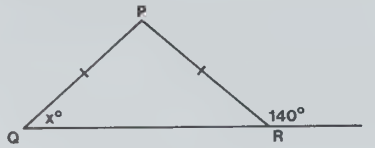
A) 30°

B) 40°

C) 110°

D) 140°

25. In the triangle below, PQ = PR.



The value of **x** is:

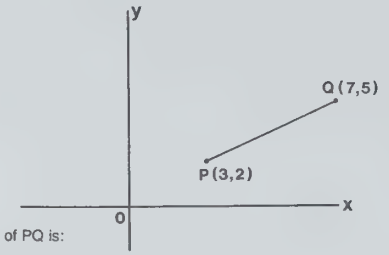
A) 40°

B) 70°

C) 80°

D) 140°

26. Examine the figure below.



The length of PQ is:

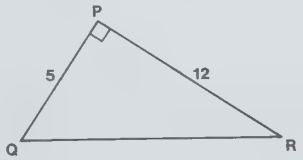
A) 5

B) 7

C) 10

D) 25

27. Examine the triangle below.



The length of QR is :

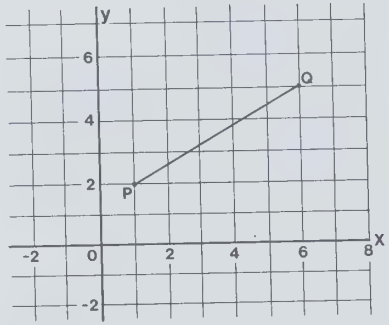
A) 7

B) 11

C) 13

D) 17

28. Examine the graph below.



The slope of PQ is:

A) $\frac{3}{5}$

B) $\frac{5}{3}$

C) $-\frac{3}{5}$

D) $-\frac{5}{3}$

PLACE YOUR ANSWER IN THE SPACE PROVIDED.

29. State the positive square root of 12.59 correct to two decimal places.

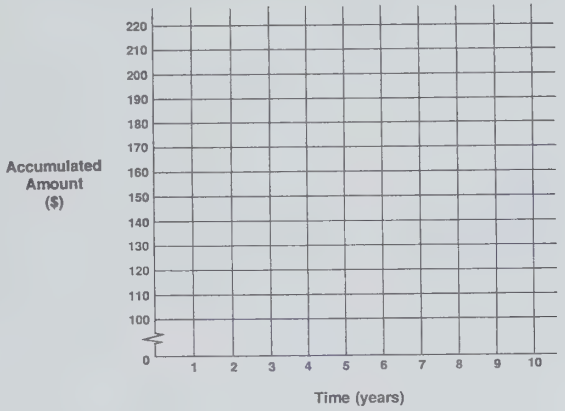
Answer:_____

30. The table below shows the relation between the accumulated amount of an investment at 8%/a compounded annually and the number of years the amount has been invested.

Time (years)	0	2	4	6	8	10
Accumulated Amount ($)	$100	$117	$136	$159	$185	$216

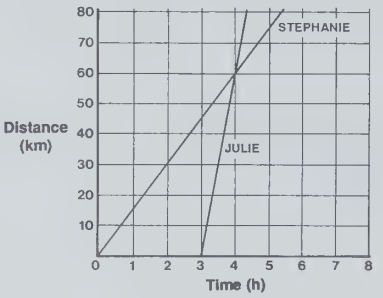
Graph the relation on the grid below.

AMOUNT OF INVESTMENT AT 8 %/a COMPOUNDED ANNUALLY



31. Stephanie and Julie decided to travel the 90 km to their cottage one weekend. Stephanie rode a bike at an average speed of 15 km/h. Three hours after Stephanie left, Julie got in her car and drove along the same route at an average speed of 60 km/h. The graph below shows the distance each had travelled and the number of hours travelled.

DISTANCE TRAVELLED



When Julie catches up to Stephanie, how many hours has Stephanie been travelling?

Answer: _____

SHOW YOUR WORK.

32. Solve for **n** using an algebraic solution.

$$2n - 2 = -9n + 20$$

SHOW YOUR WORK.

33. Matchsticks are arranged as follows:

FIGURE 1 FIGURE 2 FIGURE 3

If the pattern is continued, how many matchsticks are used in making the 10th figure?

STUDENT ASSESSMENT BOOKLET

MATHEMATICS

Grade 10 Mathematics, General Level

2

PROVINCIAL REVIEWS

Program Implementation & Review Branch
Ministry of Education

INSTRUCTIONS

1. Make sure your *Mathematics Student Answer Sheet* is turned to side 1 (title at top of page). Use an ***HB pencil*** to fill out your answer sheet.

   Be sure you have the following materials available:

   - eraser
   - ruler
   - calculator

2. Fill in your **name**, the name of **your school board**, **your school**, and **your mathematics teacher** at the top of the *Mathematics Student Answer Sheet.* Also make sure you have filled in all the appropriate bubbles at the top of the sheet.

3. Do the sample question below. To record your answer, fill in the correct bubble under the word **EXAMPLE** on your answer sheet.

   EXAMPLE What year is this?

   A) 1989
   B) 1990
   C) 1991
   D) 1992

   You should have filled in bubble **B** on your answer sheet since this is 1990.

4. There are 33 questions in this **Student Assessment Booklet**. Some are multiple-choice and will be answered on the *Mathematics Student Answer Sheet.* Others are open-ended and will be answered directly in this booklet.

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5. Read each question in the booklet carefully. Next to each question number on your answer sheet, fill in the bubble that contains the letter corresponding to your response. Erase completely any responses you want to change.

6. On the front cover you will find a booklet number. On your answer sheet, find the box that corresponds to your booklet number. Be sure to record your answers in this box.

   If you have any questions about what you are supposed to do, ask your teacher.

41. Don and Yuri took a taxi back from a show. The following table compares distance (**d**) in kilometres and cost (**c**) in dollars.

d (km)	1	2	3	4	5	6	7
c ($)	1.30	1.50	1.70	1.90	2.10	2.30	2.50

The cost for a trip of 9 km would be:

A) $2.50

B) $2.70

C) $2.90

D) $3.10

42. The number 0.000 081 written in scientific notation is:

A) 0.81×10^{-5}

B) 0.81×10^{-4}

C) 8.1×10^{-4}

D) 8.1×10^{-5}

43. The positive square root of 16 is:

A) 256

B) 32

C) 8

D) 4

44. The radius (**r**) of a circle is given by the formula

$$r = \sqrt{\frac{A}{3.14}}$$, where **A** represents the area of the circle.

If the area of a circle is 85 cm^2, then the radius is:

A) 0.19 cm

B) 2.9 cm

C) 5.2 cm

D) 27 cm

45. A sum of $60 is shared between two people. If the ratio of Gaston's share to Elise's share is 2:3, Gaston's share is:

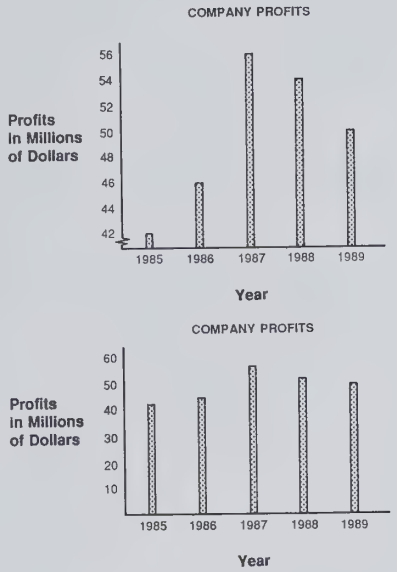
A) $20

B) $24

C) $36

D) $40

46. The two graphs below show the same data.



Why do the two graphs above give different impressions?

A) The scale on the profits axis has been changed.

B) The scale on the year axis has been changed.

C) The scales on both axes have been changed.

D) The graphs represent different information.

47. Jill works at The Roasted Chicken and has an hourly wage of $4.80. After three months, her hourly wage will be increased by 5 %. Her new hourly wage will be:

A) $0.24

B) $5.04

C) $5.52

D) $7.20

48. 70 out of 100 students surveyed planned to vote for Liz for president. How many of the 1 000 students in the school may be expected to vote for Liz?

A) 700

B) 170

C) 100

D) 70

49. "One-half of the workers earned $25 000 or more last year".

In this statement, $25 000 represents:

A) the mean.

B) the median.

C) the mode.

D) the range.

50. Olav keeps a record of all his banking.

Date	Description	Debit	Credit	Balance
May 1	Carried forward			178.43
May 5	Cheque #121	19.86		158.57
May 10	Withdrawal	40.00		
May 15	Pay		72.10	

The balance on May 15 is:

A) $270.67

B) $190.67

C) $126.47

D) $46.47

51. Kris borrowed $600 for 4 months at 24 %/a. The formula to calculate simple interest on such a loan is:

$$I = prt$$

The simple interest is:

A) $48

B) $144

C) $192

D) $576

52. Which one of the following is a type of savings?

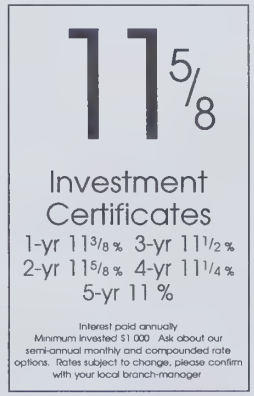
A) Demand Loan

B) Charge Account

C) Line of Credit

D) Guaranteed Investment Certificate

53. The advertisement below shows that a 3-yr Investment Certificate earns $11\frac{1}{2}$ % simple interest paid annually.


11 5/8
Investment Certificates
1-yr 11 3/8 % 3-yr 11 1/2 %
2-yr 11 5/8 % 4-yr 11 1/4 %
5-yr 11 %
Interest paid annually
Minimum invested $1 000 Ask about our semi-annual monthly and compounded rate options. Rates subject to change, please confirm with your local branch-manager

The interest earned for the first year on a 3-yr Investment Certificate of $1 000 is:

A) $1.15

B) $11.50

C) $115.00

D) $1 115.00

54. The expression (+3z) – (–z) equals:

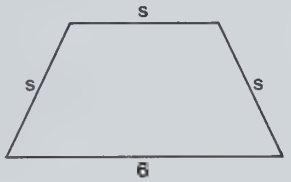
A) 4z

B) 2z

C) $3z^2$

D) $4z^2$

55. Examine the figure below:



Which formula represents the perimeter of this figure?

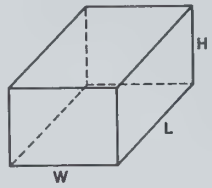
A) p = 6s

B) p = s + 6

C) p = 3s + 6

D) p = 2(6 + s)

56. **V = LWH** is a formula for the volume (**V**) of a rectangular solid.



If **V** = 100, **L** = 8.0, and **W** = 5.0, then **H** is:

A) 0.4

B) 2.5

C) 60

D) 4 000

57. A first step in solving the equation 5x – 2 = 13 is to add a number to both sides of the equation. The best number to add to both sides is:

A) 5

B) 2

C) –2

D) 13

58. The expression 2(a + 3) + 3(a + 4) equals:

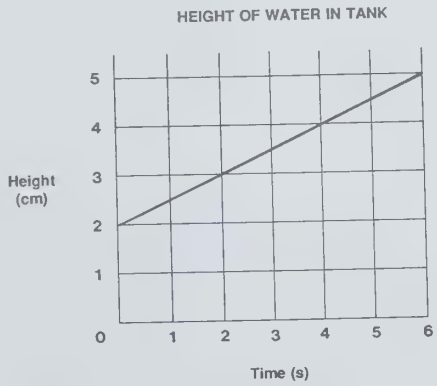
A) 18a

B) 6a + 10

C) 5a + 7

D) 5a + 18

59. A tank is being filled with water. The graph below shows the height of water in the tank at different times.



When the height of water in the tank is 3.5 cm, the amount of time that has passed is:

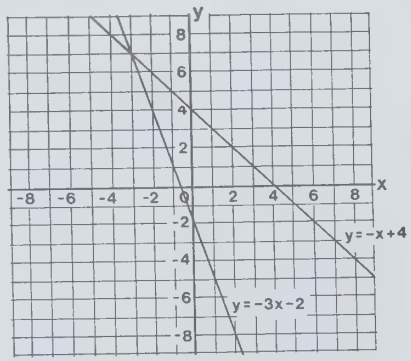
A) 2 s

B) 2.5 s

C) 3 s

D) 3.5 s

60. Examine the graph below:



The point of intersection of the two lines $y = -3x - 2$ and $y = -x + 4$ is:

A) (–3,7)

B) (4,0)

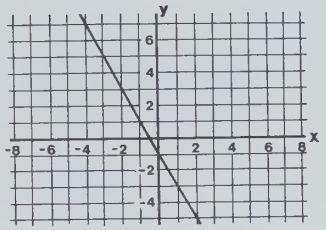
C) (0,4)

D) (0,–2)

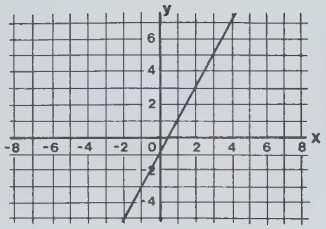
61. The graph of $y = -2x - 1$ is:

x	y

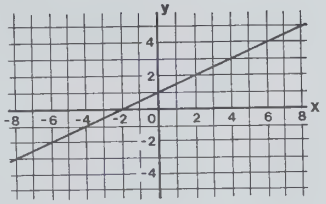
A)



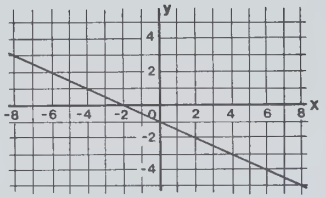
B)



C)



D)



62. The solution for $x + y = 7$ and $x - y = 1$ is:

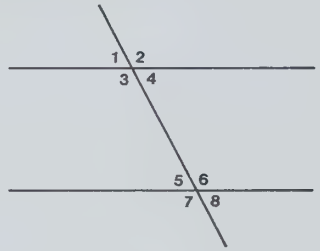
A) $x = 1,\ y = 6$

B) $x = 3,\ y = 4$

C) $x = 4,\ y = 3$

D) $x = 8,\ y = -1$

63. Examine the figure below:



One pair of corresponding angles in this diagram is:

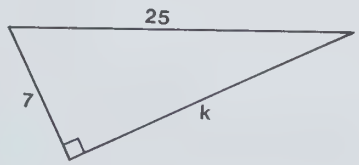
A) $\angle 2$ and $\angle 8$

B) $\angle 4$ and $\angle 5$

C) $\angle 3$ and $\angle 5$

D) $\angle 1$ and $\angle 5$

64. Examine the triangle below:



The value of **k** is :

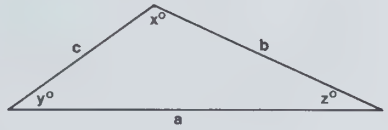
A) 32

B) 26

C) 24

D) 18

65. Examine the triangle below:



In the triangle above:

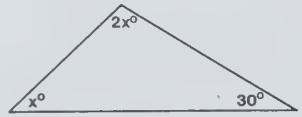
A) $x° + y° + z° = 180°$

B) $a + b + c = 180°$

C) $a = b + c$

D) $y° = x° + z°$

66. Examine the triangle below:



The value of **x** is:

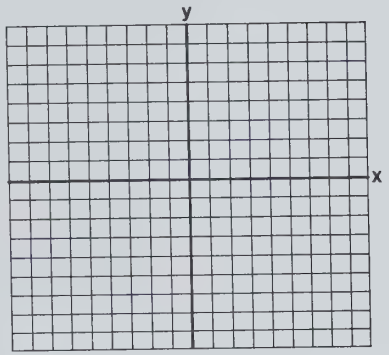
A) 75°

B) 70°

C) 50°

D) 10°

67. For this problem, you may use the grid if you wish.



The slope of the line joining P(–2,4) and Q(3,5) is:

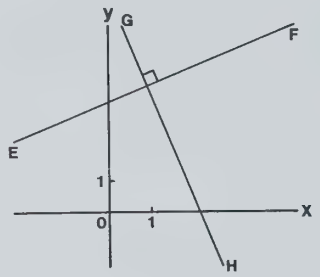
A) -1

B) $-\frac{1}{5}$

C) 1

D) $\frac{1}{5}$

68. In the diagram below, GH is perpendicular to EF.



If the slope of EF is $\frac{2}{3}$, then the slope of GH is:

A) $-\frac{3}{2}$

B) $-\frac{2}{3}$

C) $\frac{2}{3}$

D) $\frac{3}{2}$

PLACE YOUR ANSWER IN THE SPACE PROVIDED.

69. The formula for the volume (**V**) of a rectangular room is **V = LWH** where length (**L**), width (**W**), and height (**H**) are the room's dimensions.

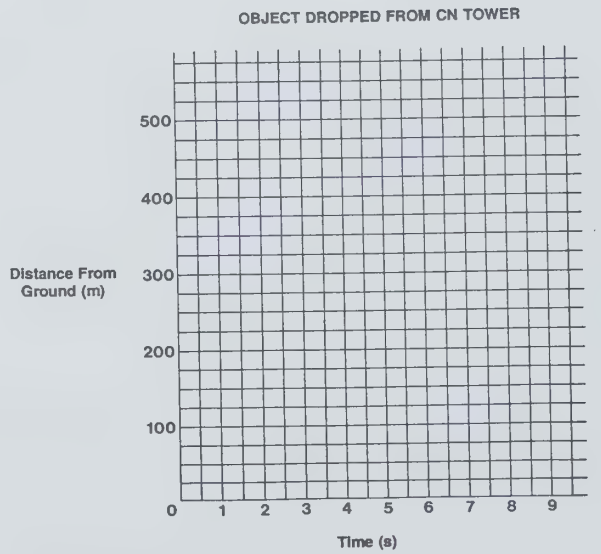
    To determine which air conditioner to buy, Bill needed to know the volume of his room. Its length is 4.0 m, its width is 3.0 m, and its height is 2.4 m. Calculate its volume to the nearest cubic metre.

    Answer: _____ m^3

70. An object is dropped from the CN Tower. The table below shows the distance from the ground at different times.

Time (s)	1	3	5	7	9
Distance from the ground (m)	435	405	325	205	45

Graph the relation on the grid below.



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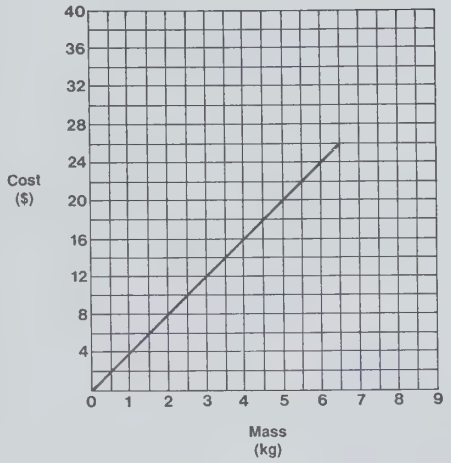
71. The graph below shows the cost of different masses of a nut mixture.

COST OF NUT MIXTURE

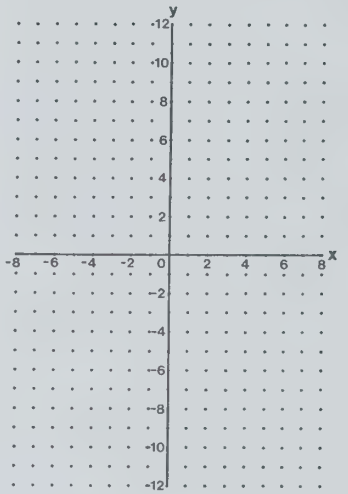


State the number of kilograms that can be bought for $34.

Answer: _____ kg

SHOW YOUR WORK.

72. Draw the graph of $y = 2x - 5$.



SHOW YOUR WORK.

73. Tin Jee collects basketball cards. When they are stacked in piles of 2, there is 1 left over. When they are stacked in piles of 3, there is 1 left over. With piles of 5, there are none left over. If he has fewer than 50 basketball cards, how many cards does he have?

STUDENT ASSESSMENT BOOKLET

MATHEMATICS

Grade 10 Mathematics, General Level

3

PROVINCIAL REVIEWS

Program Implementation & Review Branch
Ministry of Education

INSTRUCTIONS

1. Make sure your *Mathematics Student Answer Sheet* is turned to side 1 (title at top of page). Use an ***HB pencil*** to fill out your answer sheet.

   Be sure you have the following materials available:

   - eraser
   - ruler
   - calculator

2. Fill in your **name**, the name of **your school board**, **your school**, and **your mathematics teacher** at the top of the *Mathematics Student Answer Sheet.* Also make sure you have filled in all the appropriate bubbles at the top of the sheet.

3. Do the sample question below. To record your answer, fill in the correct bubble under the word **EXAMPLE** on your answer sheet.

   EXAMPLE What year is this?

   A) 1989
   B) 1990
   C) 1991
   D) 1992

   You should have filled in bubble **B** on your answer sheet since this is 1990.

4. There are 33 questions in this **Student Assessment Booklet**. Some are multiple-choice and will be answered on the *Mathematics Student Answer Sheet.* Others are open-ended and will be answered directly in this booklet.

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6. On the front cover you will find a booklet number. On your answer sheet, find the box that corresponds to your booklet number. Be sure to record your answers in this box.

   If you have any questions about what you are supposed to do, ask your teacher.

81. Renata received marks of 13, 16, 15, 16, 14 and 15 on six tests worth 20 marks each. Renata's average mark to one decimal place is:

A) 4.5

B) 14.8

C) 15.8

D) 89.0

82. The temperature at noon was 13°C. By midnight, it had fallen 19 degrees. The temperature at midnight is:

A) −32°C

B) −6°C

C) +6°C

D) +32°C

83. The value of 3^{-2} is:

A) $\frac{1}{9}$

B) $-\frac{1}{9}$

C) −6

D) −9

84. The expression $3^6 + 3^2$ equals:

A) 3^3

B) 1^3

C) 3^4

D) 3^8

85. A painter is to mix green and yellow paint in the ratio of 4 to 7 to obtain the color he wants. If he has 28 L of green paint, how many litres of yellow paint should be added?

A) 16

B) 28

C) 49

D) 196

86. In a survey of 120 Grade 9 students, 90 replied that they talked on the telephone at least once a day. What percent of those surveyed talked on the telephone at least once a day?

A) 25 %

B) 30 %

C) 75 %

D) 90 %

87. You need to select a representative sample of students in your high school to decide whether or not you should raise the student activity fee by $5.00.

Which of the following samples is the least biased?

A) Every Grade 10 student in the school.

B) Every member of all sports teams of the school.

C) Every female student in the school.

D) Every 5th student from the school list.

88. Seven students wrote a mathematics test marked out of 100. Their marks were:

71, 72, 72, 79, 87, 90, 96

The median is:

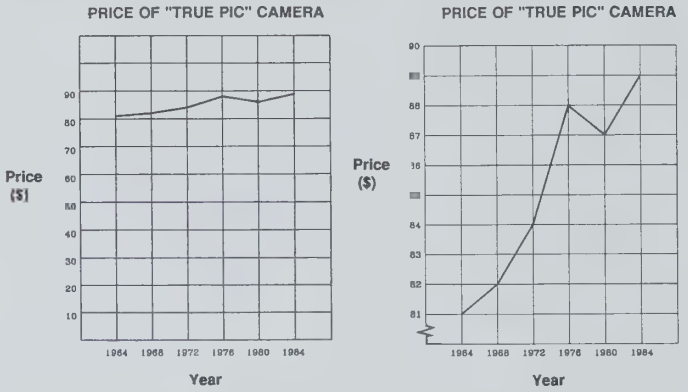
A) 72

B) 79

C) 81

D) 85

89. The two graphs below show the same data.



Why do the two graphs above give different impressions?

A) The scales on both axes have been changed.

B) The scale on the year axis has been changed.

C) The scale on the price axis has been changed.

D) The graphs represent different information.

90. Llarian had $250 take-home pay from her part-time job during the last month. She used part of the money as shown in the following chart.

CATEGORY	AMOUNT
Savings	$41.35
Transportation	$57.80
Food	$65.10
Entertainment	?

The amount Llarian could spend on entertainment is:

A) $85.75

B) $164.25

C) $168.45

D) $208.65

91. Your bank statement shows a balance of $275.16. A cheque for $20 and a cheque for $10 do not appear on the statement because they are outstanding cheques.

The balance that should appear in your own records is:

A) $245.16

B) $285.16

C) $295.16

D) $305.16

92. $1 000 is invested at 10%/a compounded annually.

	Principal at the beginning of the year	Interest for the year	Amount at the end of the year
1st year	$1 000	$100	$1 100
2nd year	$1 100		

The interest for the second year is:

A) $100

B) $110

C) $210

D) $1 210

93. Jodie buys a stereo that sells for $599 including tax. She has a choice of paying cash or $55 per month for 12 months on the instalment plan. She chooses the instalment plan.

How much more does she have to pay since she has chosen not to pay cash?

A) $5.08

B) $49.92

C) $61.00

D) $660.00

94. Nigel works in a packaging factory in the summer. He earns $32 per day and a bonus of $2 for each of **N** orders that he packages.

The formula that describes Nigel's total daily pay (**P**), in dollars, is:

A) **P** = (32 + **N**)2

B) **P** = (32 + 2)**N**

C) **P** = 32**N** + 2

D) **P** = 32 + 2**N**

95. The expression (2r + 3p) + (6r – 8p) equals:

A) 8r – 5p

B) 12r – 24p

C) 3rp

D) 8r – 11p

96. The expression (2m)(3n) equals:

A) 5mn

B) 2m + 3n

C) 6mn

D) m^2n^3

97. The expression 3(5x – 2y + 3) equals:

A) 15x – 2y + 3

B) 15x – 6y + 9

C) –90xy

D) 18xy

98. To solve the equation $\frac{1}{3}a = 6$:

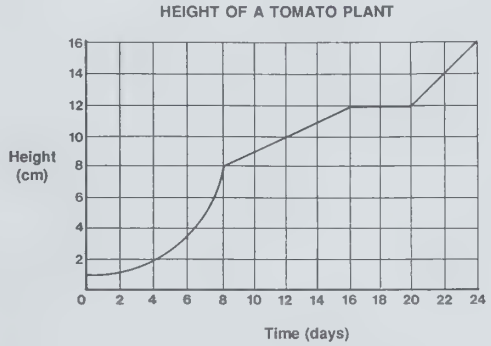
A) multiply both sides by 3 to get a = 18.

B) multiply the left side by 3 to get a = 6.

C) divide both sides by 3 to get a = 2.

D) divide the left side by $\frac{1}{3}$ to get a = 6.

99. The graph below shows the height of a tomato plant as measured over 24 days for a science project.



During which days did the tomato plant not grow?

A) between the 2nd and the 8th day

B) between the 2nd and the 16th day

C) between the 20th and the 24th day

D) between the 16th and the 20th day

100. Read the following chart.

Number of Extra Toppings (n)	Cost of Pizza in dollars (c)
0	8.00
1	8.50
2	9.00
3	9.50

The formula that relates the cost (**c**) of pizza in dollars to the number (**n**) of extra toppings is:

A) $c = 8.50n$

B) $c = 8.00n + 0.50$

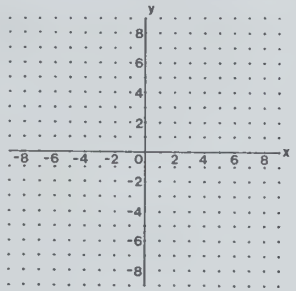
C) $c = 8.00 + 0.50n$

D) $c = n + 8.50$

101. Irene worked out the table of values below as the first step in graphing a straight line. One of the points is not correct because of a calculation error.

x	y
–1	–8
1	0
–3	–3
0	–4

Plot the 4 points on the diagram below to determine which point is incorrect.



The incorrect point is:

A) (–1,–8)

B) (1,0)

C) (–3,–3)

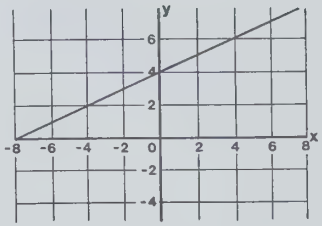
D) (0,–4)

102. Alphonso worked out the table of values below as the first step in graphing a straight line for a given equation.

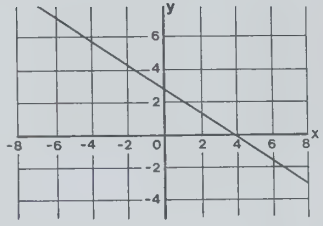
x	y
2	1
4	0
–2	3

The correct graph is:

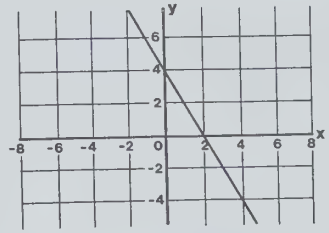
A)



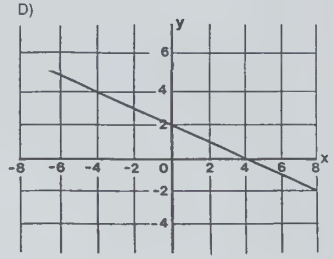
B)



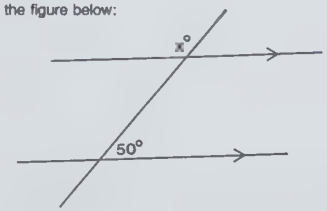
C)



D)



103. Examine the figure below:



The value of **x** is:

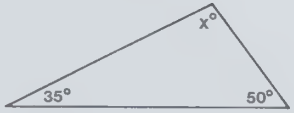
A) 40°

B) 50°

C) 100°

D) 130°

104. Examine the triangle below:



The value of **x** is:

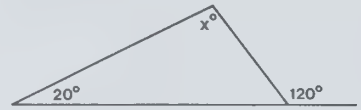
A) 85°

B) 95°

C) 130°

D) 145°

105. Examine the triangle below:



The value of **x** is:

A) 20°

B) 100°

C) 120°

D) 160°

106. Examine the figure below:

The value of **x** is:

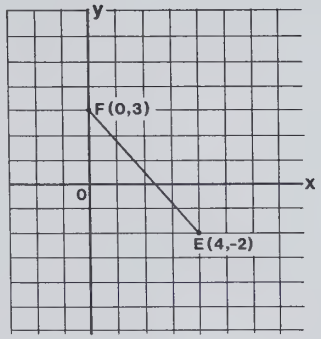
A) 75°

B) 85°

C) 95°

D) 105°

107. Examine the graph below:



The slope of EF is:

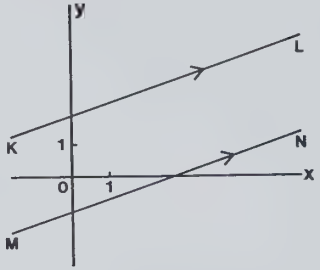
A) $-\frac{5}{4}$

B) $-\frac{4}{5}$

C) $\frac{4}{5}$

D) $\frac{5}{4}$

108. In the diagram below, MN is parallel to KL and the slope of KL is $\frac{1}{3}$.



The slope of MN is:

A) 3

B) $\frac{1}{3}$

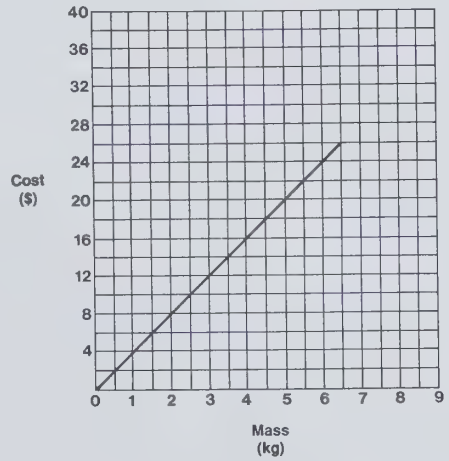
C) $-\frac{1}{3}$

D) –3

PLACE YOUR ANSWER IN THE SPACE PROVIDED.

109. The graph below shows the cost of different masses of a nut mixture.

COST OF NUT MIXTURE



State the cost of 8.5 kg of this mixture.

Answer: $ _____

110. Complete the following bank statement by filling in the unshaded boxes to show the balances for May 5 and May 15.

BANK STATEMENT

Date	Withdrawal	Deposit	Balance
May 1			732.04
May 5	14.52		
May 5		100.00	
May 10		55.00	872.52
May 15	37.68		
May 15	29.37		

111. To make a fruit punch, you mix two cans of apple juice, three cans of grape juice and four cans of ginger ale. The cans are all the same size. What is the ratio of the amount of apple juice, to the amount of grape juice, to the amount of a ginger ale?

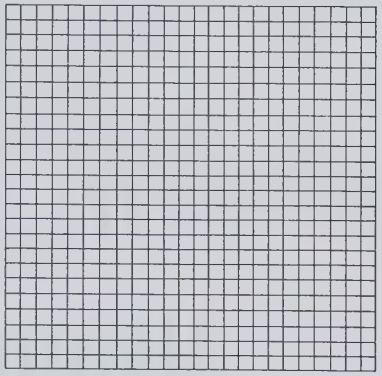
Answer: _____

112. Radioactive fluoride has a half-life of two hours. Suppose you start with 100 g of radioactive fluoride. The table gives the approximate amount of fluoride remaining at different times.

Time (h)	Mass of Flouride (g)
0	100
2	50
4	25
6	12.5

Draw a graph of this relation on the grid below.

AMOUNT OF RADIOACTIVE FLUORIDE



SHOW YOUR WORK.

113. On the beach during the summer, Nina collected white and pink shells. One the first day, she found 2 white shells and 1 pink shell. On the next day, she found 4 white shells and 4 pink shells, and on the third day she found 6 white shells and 7 pink shells. If this pattern continued, on what day did she find 6 more pink shells than white shells?

STUDENT ASSESSMENT BOOKLET

MATHEMATICS

Grade 10 Mathematics, General Level

4

PROVINCIAL REVIEWS

Program Implementation & Review Branch
Ministry of Education

INSTRUCTIONS

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   EXAMPLE What year is this?

   A) 1989
   B) 1990
   C) 1991
   D) 1992

   You should have filled in bubble **B** on your answer sheet since this is 1990.

4. There are 33 questions in this **Student Assessment Booklet**. Some are multiple-choice and will be answered on the *Mathematics Student Answer Sheet.* Others are open-ended and will be answered directly in this booklet.

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121. Tom's hockey team finished the season with 17 wins, 5 ties, and 12 losses. A win counts 2 points, a tie 1 point, and a loss 0 points. The number of points the team has is:

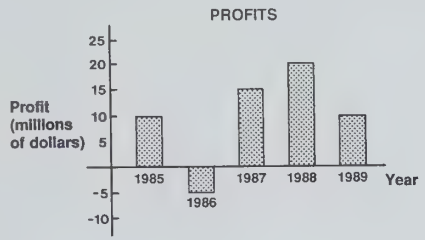
A) 5

B) 22

C) 34

D) 39

122. The graph below shows the profits for a large corporation for the last 5 years.



The total profit for the 5-year period, in millions of dollars, is:

A) 10

B) 20

C) 50

D) 60

123. The table shows the cost of making a long distance telephone call from Toronto to Thunder Bay on Saturday morning.

Time (min)	2	4	6	8	10
Cost ($)	1.40	2.60	3.80	5.00	6.20

The cost of a 5 minute call would be:

A) $3.10

B) $3.20

C) $3.30

D) $3.50

124. The value of $(-2)^4$ is:

A) −16

B) −8

C) 8

D) 16

125. The expression $4^2 \times 4^3$ equals:

A) 4^5

B) 4^6

C) 8^5

D) 16^5

126. A 100-mL tube of toothpaste sells for $1.75. The price per millilitre is:

A) $175.00

B) $57.14

C) $0.57

D) $0.0175

127. In a school of 800 pupils, 300 are boys. The ratio of the number of boys to the number of girls is:

A) 3:8

B) 3:11

C) 3:5

D) 5:3

128. A pair of skis sells for the regular price of $395.00. At 30% off, the sale price is:

A) $118.50

B) $276.50

C) $365.00

D) $513.50

129. You are asked to gather data to determine whether or not a library should be built in your community. You plan to conduct a survey.

The best population from which to choose the sample would be:

A) all the people living in the community.

B) all the members of book clubs in the community.

C) all the students in your school.

D) all the teachers in your school.

130. Seven students wrote a mathematics test marked out of 100. Their marks were:

87, 79, 71, 72, 72, 90, 96

The mean is:

A) 72

B) 79

C) 81

D) 85

131. Your bank statement shows a balance of $374.75. There is one outstanding cheque (one that doesn't appear on the statement) for $80.00 for the purchase of a jacket.

What balance should appear in your own records?

A) $80.00

B) $294.75

C) $374.75

D) $454.75

132. $1 000 is invested at 10 %/a compounded annually.

	Principal at the beginning of the year	Interest for the year	Amount at the end of the year
1st year	$1 000	$100	$1 100
2nd year			

The principal at the beginning of the second year is:

A) $100

B) $1 000

C) $1 100

D) $2 100

133. Which one of the following is a type of borrowing available to the consumer?

A) Personal Loan

B) Canada Savings Bonds

C) Guaranteed Investment Certificate

D) Daily Interest Savings Account

134. $2x + x + 8 + 4 =$

A) $2x + 12$

B) $3x + 12$

C) $14x$

D) $15x$

135. $(2a + 3b) - (5a - 2b) =$

A) $3a + b$

B) $-3a + b$

C) $3a + 5b$

D) $-3a + 5b$

136. $-5a\,(3b - 2) =$

A) $-15ab + 10a$

B) $-15ab - 10a$

C) $-15ab + 2$

D) $-15ab - 2$

137. $(-5a)(-5a) =$

A) $-25a^2$

B) $-10a^2$

C) $10a^2$

D) $25a^2$

138. $\mathbf{P} = 2\mathbf{L} + 2\mathbf{W}$ is the formula for the perimeter ($\mathbf{P}$) of a rectangle with length ($\mathbf{L}$) and width ($\mathbf{W}$). If $\mathbf{P} = 34$ and $\mathbf{W} = 7$, then $\mathbf{L}$ is:

A) 10

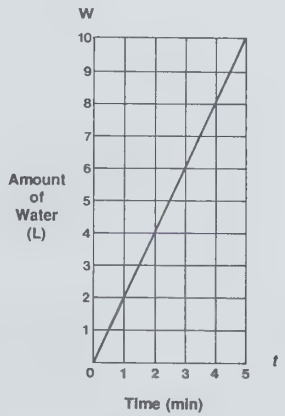
B) 18

C) 20

D) 24

139. The graph below shows the number of litres of water in a bathtub compared to the length of time in minutes since the water was turned on.

WATER IN BATHTUB



A formula relating the number of litres (w) of water in the bathtub and the time in minutes *(t)* since the water was turned on is:

A) $w = t - 2$

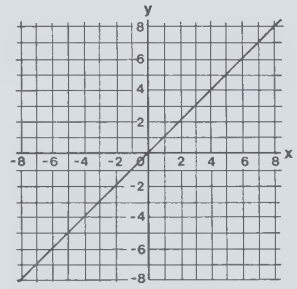
B) $w = 2t$

C) $w = \frac{t}{2}$

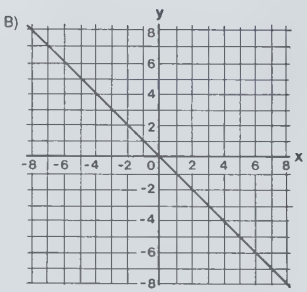
D) $w = 2 + t$

140. The graph of $y = x + 5$ is:

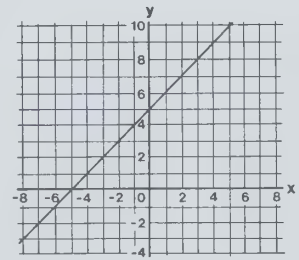
A)



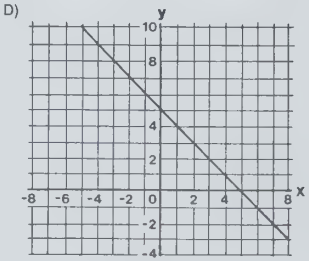
B)



C)



D)



141. The point of intersection of two lines **p** and **q**:

A) is on both, lines **p** and **q**.

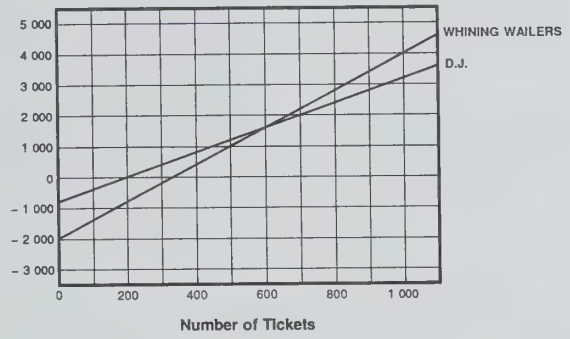
B) is not on either line, **p** or **q**.

C) is on line **p** but not on line **q**.

D) is on line **q** but not on line **p**.

142. The student council has two choices for the upcoming Valentine's Day Dance. They can bring in the Whining Wailers at a cost of $2 000 and charge $6 admission or they can hire a D.J. at a cost of $800 and charge $4 admission. Roberta drew the graph below to compare the profit to be made with the number of tickets sold.

PROFITS FOR THE DANCE



The number of tickets that would give the same profit for both the Whining Wailers and the D.J. is:

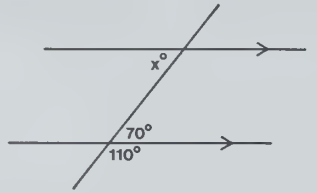
A) 2 000

B) 1 500

C) 800

D) 600

143. Examine the figure below:



The value of **x** is:

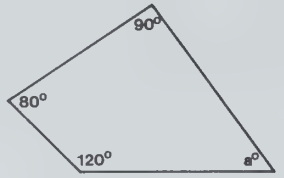
A) 110°

B) 70°

C) 40°

D) 20°

144. Examine the figure below:



The value of **a** is:

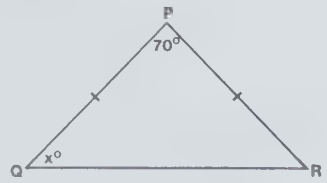
A) 50°

B) 70°

C) 90°

D) 130°

145. In the triangle below, PQ = PR.



The value of x is:

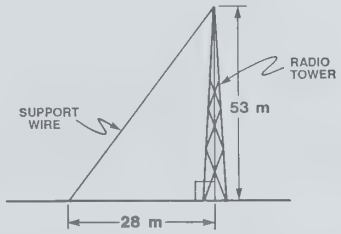
A) 35°

B) 55°

C) 70°

D) 110°

146. The diagram below shows a radio tower.



The length of the support wire for the radio tower is approximately:

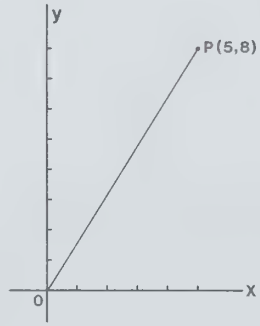
A) 25 m

B) 45 m

C) 60 m

D) 81 m

147. Examine the graph below:



The slope of OP is:

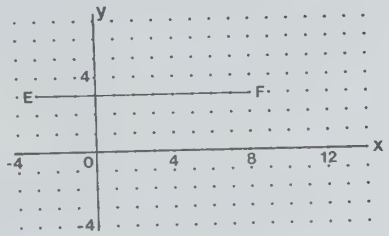
A) $-\frac{8}{5}$

B) $-\frac{5}{8}$

C) $\frac{5}{8}$

D) $\frac{8}{5}$

148. Examine the graph below:



The slope of EF is:

A) 0

B) $\frac{1}{8}$

C) 1

D) 8

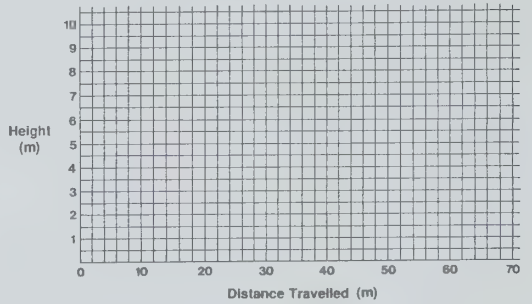
PLACE YOUR ANSWER IN THE SPACE PROVIDED.

149. The table below shows the height of a golf ball above the ground as compared to the distance it has travelled down a fairway.

Distance (m)	Height (m)
0	0
10	4.4
20	
30	9.4
40	10.0
50	8.5
60	5.1
65	3.2
70	0

(a) Draw a graph of the relation.

HEIGHT OF GOLF BALL AND DISTANCE TRAVELLED



(b) Use your graph to estimate the height of the golf ball off the ground after it has travelled a distance of 20 m.

Answer: _____ m

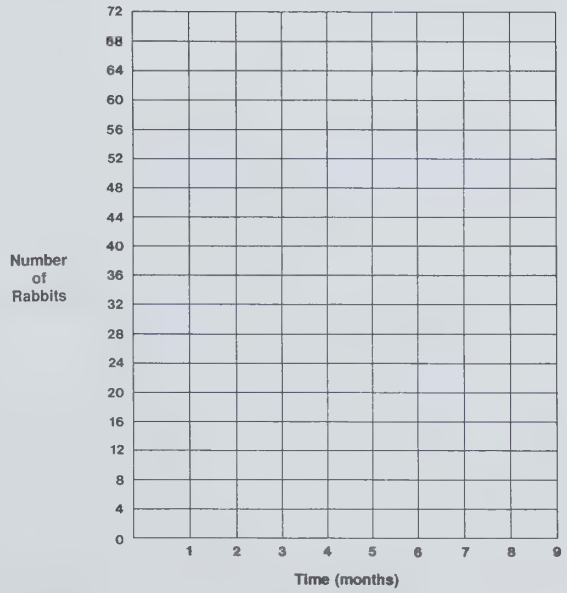
SHOW YOUR WORK.

150. The table below shows the relation between the population in a rabbit colony and the length of time in months.

Time (in months)	0	1	2	3	4	5
Number of rabbits	2	4	8	16	32	64

Draw a graph of the relation on the grid below.

RABBIT POPUALTION



SHOW YOUR WORK.

151. Solve for x using an algebraic solution.

$$7x - 4 = 2x + 41$$

PLACE YOUR ANSWERS IN THE SPACES PROVIDED.

152. Margaret Fischer gets her pay cheque today. Margaret deposits her cheque for $125 less $50 she wishes to keep as cash.

Complete the deposit slip for Margaret.

DEPOSIT

THE BANK OF X

CASH

CHEQUES/ COUPONS

SUB-TOTAL

LESS CASH

NET DEPOSIT

DATE: May 19, 1990

DEPOSITOR'S INITIALS: M. F.

SIGNATURE - CASH RECEIVED: Margaret Fischer

BRANCH NO.	ACCOUNT NO.	NAME (PLEASE PRINT)
153	514762	MARGARET FISCHER

SHOW YOUR WORK.

153. A contest was held to guess the number of peanuts in a jar. Four wrong guesses were made: Sabrina, 163 peanuts; Pierre, 169; Yasmine, 178; and Carlos, 185. One of these guesses was wrong by 1, another by 6, another by 10, and another by 16. How many peanuts are there?

SCORING GUIDE: STUDENT ASSESSMENT BOOKLETS

GRADE 10 MATHEMATICS

General Level

PROVINCIAL REVIEWS

MATHEMATICS

Ministry of Education
Program Implementation and
Review Branch

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DIRECTIONS

A. GENERAL INSTRUCTIONS

The four Student Assessment Booklets each contain:

- 4 open-ended questions that may be scored correct or incorrect or that may have several parts to score
- 1 process problem that follows a more complex scoring procedure.

Record your assessment in the area called "For Teacher's Use Only" on the back of each student's answer sheet. Be sure to record your score in the box corresponding to the booklet number the student completed. Fill in the circle next to each question number that corresponds to your assessment of the student's response.

Use an HB pencil.

B. OPEN-ENDED QUESTIONS (OTHER THAN PROCESS PROBLEMS)

In your assessment of each student's solution to these questions, please note that some questions have several sections to score (e.g., Booklet 1, Question 30). Please record a score on the answer sheet for each part of the question.

Transparency overlays are enclosed with this guide for your use in scoring problems requiring the student to complete or draw a diagram.

Use your professional judgement in determining the correctness of a student's drawing that does not exactly match the art in the scoring guide or on the overlay.

C. PROCESS PROBLEMS

In your assessment of each student's solution to each problem, you are required to make two judgements:

- Has the student provided a satisfactory solution?
- What strategy did the student use to arrive at the solution?

1. Response

Record your judgement on the quality of the solution in the row labelled **Response** for the appropriate problem number on the *Mathematics Student Answer Sheet*. For all problems, the alternatives are **A** through **G** as specified in the following scoring key.

A

Alternative **A** is used to indicate no response.

B, C, D

Alternatives **B**, **C**, and **D** indicate that the student gave the correct answer:

- **B** - correct answer, complete solution
- **C** - correct answer, incomplete solution
- **D** - correct answer, no strategy/reasoning

It may be difficult to distinguish between **B** and **C** for some solutions. Only use **C** when it is very obvious that the student omitted a key component of the solution.

Alternative **D** can also be used for the situation where the student gives the correct answer and makes a few notes that are not related to a solution strategy.

E, F

Alternatives **E** and **F** indicate that the students did not give a correct answer:

- **E** - no correct answer, appropriate strategy, minor error
- **F** - no correct answer, appropriate strategy, major error

It may be difficult to distinguish between **E** and **F** for some solutions. For **E**, it should be obvious that the student would have obtained the correct answer if the minor error had not been made. Record **F**, if the student started an appropriate solution but did not complete it, or made some major error in reasoning part way through the solution.

G

G - no correct answer, no understanding

Use **G** if an incorrect answer is given with no work shown, or if the work shown does not show any understanding of the problem.

2. Strategy

The alternatives for the descriptions of the strategies are different for each question. Please choose the one strategy which most closely matches the students' work and record it in the row labelled **strategy** for the appropriate problem on the *Mathematics Student Answer Sheet.*

Notes:

These comments are presented to assist you in scoring the process problems. Please note that the student is encouraged to show the work in order that you can assess, as accurately as possible, the strategy used. In some instances you will have to use good professional judgement in evaluating the student's work.

- *Although a concluding statement to the solution of a problem is desirable, it is not required for this assessment.*
- *The diagram, charts, tables, lists, or other methods of solving a problem need not be exactly as shown.*

STUDENT ASSESSMENT BOOKLET 1

29. State the positive square root of 12.59 correct to two decimal places.

Answer: 3.55

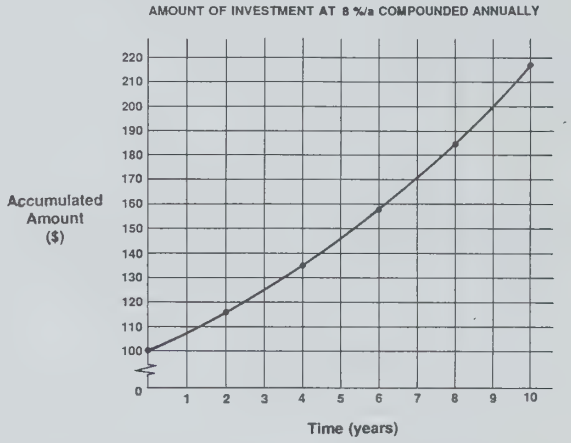
A = Did not attempt the question
B = Correct
C = Incorrect

Note: Use **C** if answer is not rounded correctly to 2 decimal places.

30. The table below shows the relation between the accumulated amount of an investment at 8 %/a compounded annually and the number of years the amount has been invested.

Time in years	0	2	4	6	8	10
Accumulated Amount	$100	$117	$136	$159	$185	$216

Graph the relation on the grid below.



Step 1

A = Did not attempt the question.

B = Plots all points within an acceptable range.

C = Does not plot all points within an acceptable range.

Notes: Use **B** if a bar graph or histogram is drawn which shows all correct annual amounts.

Use **C** if a bar graph or histogram is drawn which does not show all correct annual amounts.

Ignore **D** on the answer sheet.

Step 2

A = Joins adjacent points with curve or line segments.

B = Draws a straight line of best fit.

C = Does not join points or draw line of best fit.

D = Draws a bar graph or histogram showing correct annual amounts.

Note: Mark a response for Step 2 even if **C** is the response to Step 1.

31. Stephanie and Julie decided to travel the 90 km to their cottage one weekend. Stephanie rode a bike at an average speed of 15km/h. Three hours after Stephanie left, Julie got in her car and drove along the same route at an average speed of 60km/h. The graph below shows the distance each had travelled and the number of hours travelled.

When Julie catches up to Stephanie, how many hours has Stephanie been travelling?

Answer: 4 hours or 4

A = Did not attempt the question

B = Correct

C = Incorrect

32. Solve for **n** using an algebraic solution.

$$2n - 2 = -9n + 20$$

Answer:

I
$$2n - 2 + 2 = -9n + 20 + 2$$
$$2n = -9n + 22$$
$$2n + 9n = -9n + 9n + 22$$
$$11n = 22$$
$$\frac{11}{11}n = \frac{22}{11}$$
$$n = 2$$

II
$$2n + 9n - 2 = -9n + 9n + 20$$
$$11n - 2 = 20$$
$$11n - 2 + 2 = 20 + 2$$
$$11n = 22$$
$$\frac{11}{11}n = \frac{22}{11}$$
$$n = 2$$

III
$$n - 2 = -9n + 20$$
$$2n + 9n = 20 + 2$$
$$11n = 22$$
$$n = 2$$

A = Did not attempt the question.

B = Correct answer – shows understanding of the features of an algebraic solution.

C = Correct answer -- does not show understanding of the features of an algebraic solution or does not show work.

D = Incorrect answer or incomplete solution -- shows understanding of the features of an algebraic solution.

E = Incorrect answer or incomplete solution -- does not show understanding of the features of an algebraic solution or does not show work.

33. Matchsticks are arranged as follows:

FIGURE 1 FIGURE 2 FIGURE 3

If the pattern is continued, how many matchsticks are used in making the 10th figure?

Correct Response: 33

Note: If student draws a complete picture showing 10 boxes but does not specify 33 toothpicks, mark alternative **B**.

1. Response

Record your judgement on the quality of the solution in the row labelled **Response** for Question 33 on the *Mathematics Student Answer Sheet.* The alternatives are **A** through **G** as specified below:

A = Did not attempt the question.

B = Completes the solution correctly using an appropriate strategy.

C = Gives the correct answer, starts an appropriate strategy but does not complete it.

D = Gives the correct answer, but does not show reasoning/strategy.

E = Selects an appropriate strategy, but does not get the correct answer due to a minor (e.g., computational) error.

F = Selects an appropriate strategy and shows understanding, but does not complete the solution or makes a major error in reasoning.

G = Attempted the question but does not show understanding that would lead to a solution.

2. Strategy

Please choose the one strategy which most closely matches the students' work and record it in the row labelled **Strategy** for Question 33 on the *Mathematics Student Answer Sheet.*

A. Did not attempt the question.

B. Attempted the question but does not show understanding that would lead to a solution.

C. Answer only, right or wrong, no work shown.

D. Searching for a pattern.

Example:

6 **9** 12 15

18 21 24 27

30 33

33 matchsticks are used in the 10th figure.

Note: Use **D** if all figures up to the 10th are drawn **or** if some of the first figures are drawn and then the 10th figure **or** if only the 10th figure is drawn.

E. Constructing a Table.

Example:

Figure No.	1	2	3	4	5	6	7	8	9	10
No. of Matchsticks	6	9	12	15	18	21	24	27	30	33

F. Using a formula or equation.

Example:

6 **9** **12** **15**

Number of Matchsticks = 3(n + 1)
(n is figure number)

For 10th figure:
Number of matchsticks is 33

Other possible formulas:

N = 3n + 3

N = 6 + 3(n – 1)

S. Some other strategy.

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STUDENT ASSESSMENT BOOKLET 2

69. The formula for the volume (**V**) of a rectangular room is **V = LWH** where length (**L**), width (**W**), and height (**H**) are the room's dimensions.

To determine which air conditioner to buy, Bill needed to know the volume of his room. Its length is 4.0 m, its width is 3.0 m, and its height is 2.4 m, calculate its volume to the nearest cubic metre.

Answer: 29 or 29.0 m^3

A = Did not attempt the question.

B = Correct

C = Correct except for rounding: 28.8 or 30

D = Incorrect

70. An object is dropped from the CN Tower. The table below shows the distance from the ground at different times.

Time (s)	1	3	5	7	9
Distance from the ground (m)	435	405	325	205	45

Graph the relation on the grid below.

Step 1

A = Did not attempt the question.

B = Plots all points within an acceptable range.

C = Does not plot all points within an acceptable range.

Notes: Use **B** if a bar graph or histogram is drawn which shows the correct distances for all times in the table.

Use **C** if a bar graph or histogram is drawn which does not show the correct distances for all times in the table.

Step 2

A = Joins adjacent points with curve.

B = Joins adjacent points with line segments.

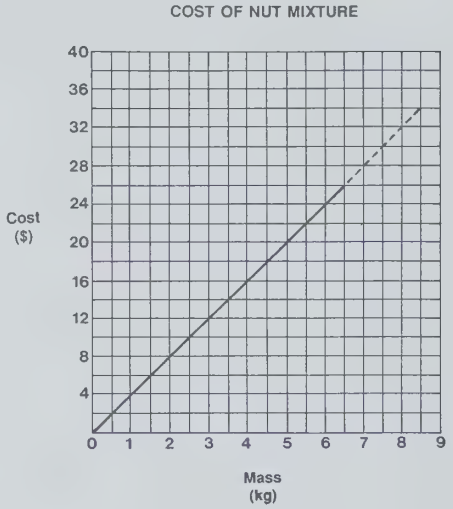
c = Draws a straight line of best fit.

D = Does not join points or draw line of best fit.

Notes: Use **D** if a bar graph or histogram is drawn.

Mark a response for Step 2 even if **C** is the response to Step 1.

71. The graph below shows the cost of different masses of a nut mixture.



State the number of kilograms that can be bought for $34.

Answer: 8.5 kg

Acceptable: Any number between 8.3 and 8.7 inclusive.

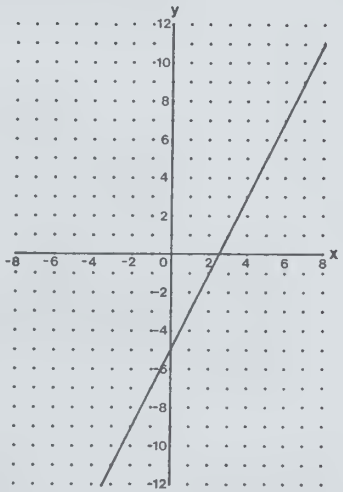
A = Did not attempt the question

B = Correct

C = Incorrect

72. Draw the graph of $y = 2x - 5$.

Answer:



A = Did not attempt the question.

B = Draws a correct graph.

C = Draws an incorrect graph or does not draw a line, but locates one point correctly or shows correct slope.

D = Locates 2 points correctly but does not draw the line.

E = Draws an incorrect graph which does not have the correct slope and does not have any point located correctly.

73. Tin Jee collects basketball cards. When they are stacked in piles of 2, there is 1 left over. When they are stacked in piles of 3, there is 1 left over. With piles of 5, there are none left over. If he has fewer than 50 basketball cards, how many cards does he have?

Correct Response: 25

1. Response

Record your judgement on the quality of the solution in the row labelled **Response** for Question 73 on the *Mathematics Student Answer Sheet.* The alternatives are **A** through **G** as specified below:

A = Did not attempt the question.

B = Completes the solution correctly using an appropriate strategy.

C = Gives the correct answer, starts an appropriate strategy but does not complete it.

D = Gives the correct answer, but does not show reasoning/strategy.

E = Selects an appropriate strategy, but does not get the correct answer due to a minor (e.g., computational) error.

F = Selects an appropriate strategy and shows understanding, but does not complete the solution or makes a major error in reasoning.

G = Attempted the question but does not show understanding that would lead to a solution.

2. Strategy

Please choose the one strategy which most closely matches the students' work and record it in the row labelled **Strategy** for Question 73 on the *Mathematics Student Answer Sheet.*

A. Did not attempt the question.

B. Attempted the question but does not show understanding that would lead to a solution.

C. Answer only, right or wrong, no work shown.

D. Searching for a pattern.

Example:

a) Piles of 2 with 1 left over
3, 5, 7, 9 .... all odd numbers.

b) Piles of 3 with 1 left over
4, 7, 10, 13 ... every third number, starting with 4.

c) Piles of 5 with none left over
5, 10, 15, 20, 25 ... every fifth number, starting with 5.

5, 15, 25 satisfy conditions (a) and (c)
condition (b) gives 4, 7, 10, 13, 16, 19, 22, 25

25 satisfies conditions a, b, and c.
He has 25 cards.

E. Constructing a table and searching for a pattern.

Example:

Number	Left over (piles of 2)	Left over (piles of 3)	Left over (piles of 5)
5	1	2	0
6	0	0	1
7	1	1	2
10	0	1	0
15	1	0	0
20	0	2	0
25	1	1	0

25 is the number.

F. Estimating (Guess and Check)

Example:

7 doesn't work
12 doesn't work
15 doesn't work
30 doesn't work
25 works

G. Using a formula or writing an equation

Example 1:

Piles of 2 with 1 left over
3, 5, 7 ..... 3 + (n – 1)2

Piles of 3 with 1 left over
4, 7, 10, 13 .....4 + (m – 1)3

Piles of 5 with none left over
5, 10, 15 ..... 5k

3 + 2n – 2 = 4 + 3m – 3 = 5k
2n + 1 = 3m + 1 = 5k

m, n, k are positive whole numbers

n	m	k
2	---	1
---	3	2
7	---	3
---	---	4
12	8	5

25 is the number

Example 2:

Piles of 2 with 1 left over
3, 5, 7 ..... 2n + 1

Piles of 3 with 1 left over
4, 7, 10, 13 ..... 3m + 1

Piles of 5 with none left over
5, 10, 15 ..... 5k

2n + 1 = 3m + 1 = 5k

m , n, k are positive whole numbers

k = 1	5k = 5	m = ?
k = 2	5k = 10	n = ?
k = 3	5k = 15	m = ?
k = 4	5k = 20	n = ?
k = 5	5k = 25	n = 12, m = 8

25 is the number

H. Accounting for all possibilities

Piles of 2 with 1 left over
3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49

Piles of 3 with 1 left over
4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49

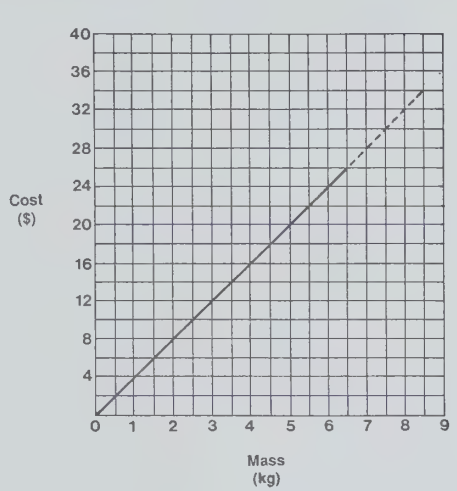
Piles of 5 with none left over
5, 10, 15, 20, 25, 30, 35, 40, 45

25 is the only number

S. Some other strategy.

STUDENT ASSESSMENT BOOKLET 3

109. The graph below shows the cost of different masses of a nut mixture.



State the cost of 8.5 kg of this mixture.

Answer: $ 34

Acceptable - Any number between 33 and 35 inclusive.

A = Did not attempt the question
B = Correct
C = Incorrect

110. Complete the following bank statement by filling in the unshaded boxes to show the balances for May 5 and May 15.

Date	Withdrawal	Deposit	Balance
May 1			732.04
May 5	14.52		
May 5		100.00	817.52
May 10		55.00	872.52
May 15	37.68		
May 15	29.37		805.47

May 5
A = Did not attempt the question
B = Correct
C = Incorrect

May 15
A = Did not attempt the question
B = Correct
C = Incorrect

111. To make a fruit punch, you mix two cans of apple juice, three cans of grape juice and four cans of ginger ale. The cans are all the same size. What is the ratio of the amount of apple juice, to the amount of grape juice, to the amount of a ginger ale?

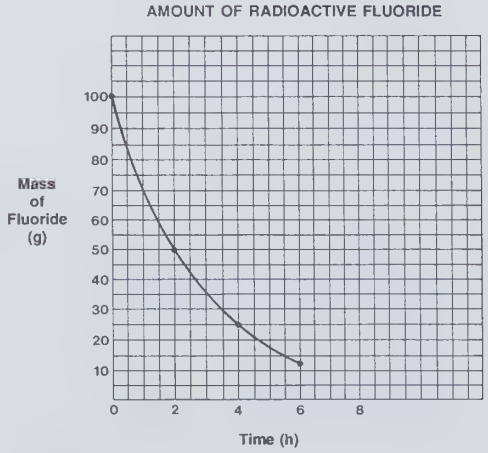
Answer: 2 : 3 : 4 or 2 to 3 to 4

A = Did not attempt the question
B = Correct
C = Incorrect

112. Radioactive fluoride has a half-life of two hours. Suppose you start with 100 g of radioactive fluoride. The table gives the approximate amount of fluoride remaining at different times.

Time (h)	Mass of Fluoride (g)
0	100
2	50
4	25
6	12.5

Draw a graph of this relation on the grid below.



Step 1	Yes	No
Attempted the question.	Y	N
Labels axes (Time axis could be the vertical axis.)	Y	N
Chooses appropriate scales (student might extend grid)	Y	N
Plots all points within acceptable range **or** draws a bar graph or histogram which shows entries in table correctly.	Y	N

Note: Record **Yes** or **No** for each part in Step 1.

Step 2

A = Joins adjacent points with curve.

B = Joins adjacent points with line segments.

C = Draws a straight line of best fit.

D = Does not join points or draw line of best fit.

Note: Use **D** if a bar graph or histogram is drawn.

113. On the beach during the summer, Nina collected white and pink shells. On the first day, she found 2 white shells and 1 pink shell. On the next day, she found 4 white shells and 4 pink shells, and on the third day she found 6 white shells and 7 pink shells. If this pattern continued, on what day did she find 6 more pink shells than white shells?

Correct Response: Day 8

1. Response

Record your judgement on the quality of the solution in the row labelled **Response** for Question 113 on the *Mathematics Student Answer Sheet.* The alternatives are **A** through **G** as specified below:

A = Did not attempt the question.

B = Completes the solution correctly using an appropriate strategy.

C = Gives the correct answer, starts an appropriate strategy but does not complete it.

D = Gives the correct answer, but does not show reasoning/strategy.

E = Selects an appropriate strategy, but does not get the correct answer due to a minor (e.g., computational) error.

F = Selects an appropriate strategy and shows understanding, but does not complete the solution or makes a major error in reasoning.

G = Attempted the question but does not show understanding that would lead to a solution.

2. Strategy

Please choose the one strategy which most closely matches the students' work and record it in the row labelled **Strategy** for Question 113 on the *Mathematics Student Answer Sheet.*

A. Did not attempt the question.

B. Attempted the question but does not show understanding that would lead to a solution.

C. Answer only, right or wrong, no work shown.

D. Searching for a pattern.

Example: (Need not be a table.)

Day	White	Pink	Difference (Pink-White)
1	2	1	−1
2	4	4	0
3	6	7	1
4	8	10	2
5	10	13	3

Difference is always 2 less than the day number.
Difference of 6 reached on 8^{th} day.

E. Constructing a table.

Example:

Day	White	Pink	Difference (Pink-White)
1	2	1	−1
2	4	4	0
3	6	7	1
4	8	10	2
5	10	13	3
6	12	16	4
7	14	19	5
8	16	22	6

F. Using a formula or writing an equation:

On the nth day Nina collected 2n white shells and 1 + 3 (n − 1), or 3n − 2 pink shells. For 6 more pink shells than white shells:

$3n - 2 - 2n = 6$
$n = 8$

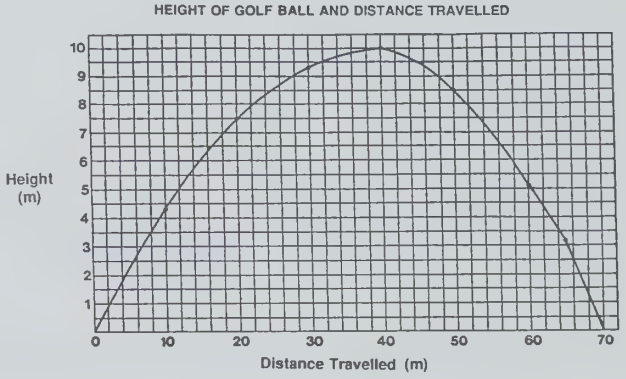
S. Some other strategy.

STUDENT ASSESSMENT BOOKLET 4

149. The table below shows the height of a golf ball above the ground as compared to the distance it has travelled down a fairway.

Distance (m)	Height (m)
0	0
10	4.4
20	
30	9.4
40	10.0
50	8.5
60	5.1
65	3.2
70	0

(a) Draw a graph of the relation.



(b) Use your graph to estimate the height of the golf ball off the ground after it has travelled a distance of 20 m.

Answer: 7.5 m

Acceptable: Any number between 6.5 and 8.5 inclusive.

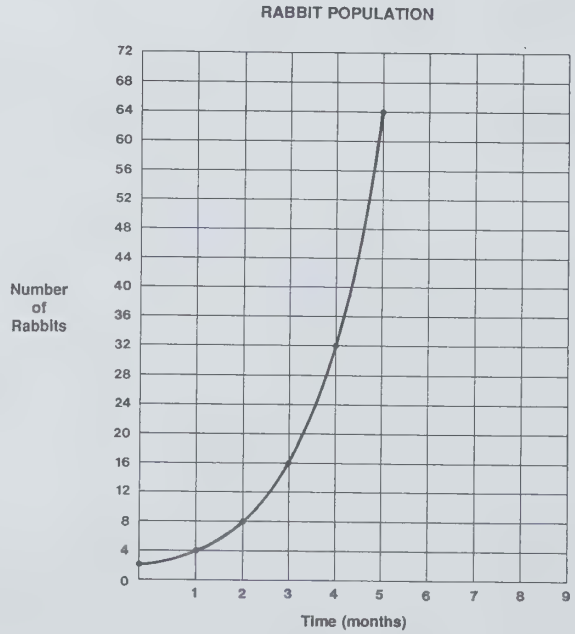
A =	Did not attempt the question.
B =	States answer within acceptable range from correctly drawn graph.
C =	States answer within acceptable range but does not draw graph or draws graph incorrectly.
D =	Draws a correct graph but does not read the height correctly from the graph.
E =	Does not draw a correct graph but reads height correctly from graph drawn.
F =	Does not draw a correct graph and does not read height correctly from graph drawn.

150. The table below shows the relation between the population in a rabbit colony and the length of time in months.

Time (in months)	0	1	2	3	4	5
Number of rabbits	2	4	8	16	32	64

Draw a graph of the relation on the grid below.

Answer:



Step 1

A = Did not attempt the question.

B = Plots points within an acceptable range.

C = Does not plot points within an acceptable range.

Notes: Use **B** if a bar graph or histogram is drawn which shows the correct populations for all times in the table.

Use **C** if a bar graph or histogram is drawn which does not show the correct populations for all times in the table.

Step 2

A = Joins adjacent points with curve.

B = Joins adjacent points with line segments.

C = Draws a straight line of best fit.

D = Does not join points or draw line of best fit.

Notes: Use **D** if a bar graph or histogram is drawn.

Mark a response for Step 2 even if **C** is the response to Step 1.

151. Solve for x using an algebraic solution.

$7x - 4 = 2x + 41$

Answer:

I
$7x - 4 + 4 = 2x + 41 + 4$

$7x = 2x + 45$

$7x - 2x = 2x - 2x + 45$

$5x = 45$

$\frac{5}{5}x = \frac{45}{5}$

$x = 9$

II
$7x - 2x - 4 = 2x - 2x + 41$

$5x - 4 = 41$

$5x - 4 + 4 = 41 + 5$

$5x = 45$

$\frac{5}{5}x = \frac{45}{5}$

$x = 9$

III
$7x - 2x = 41 + 4$

$5x = 45$

$x = 9$

A = Did not attempt the question.

B = Correct answer -- shows understanding of the features of an algebraic solution.

C = Correct answer -- does not show understanding of the features of an algebraic solution or does not show work.

D = Incorrect answer or incomplete solution -- shows understanding of the features of an algebraic solution.

E = Incorrect answer or incomplete solution -- does not show understanding of the features of an algebraic solution or does not show work.

152. Margaret Fischer gets her pay cheque today. Margaret deposits her cheque for $125 less $50 she wishes to keep as cash.

Complete the deposit slip for Margaret.

DEPOSIT

THE BANK OF X

CASH	
CHEQUES/ COUPONS	125.00
SUB-TOTAL	125.00
LESS CASH	50.00
NET DEPOSIT	75.00

DATE: May, 19, 1990 DEPOSITOR'S INITIALS: M. F.

SIGNATURE - CASH RECEIVED: Margaret Fischer

BRANCH NO.	ACCOUNT NO.	NAME (PLEASE PRINT)
153	514762	MARGARET FISCHER

		Yes	No
Completes correctly	Attempted the Question	Y	N
	Cash (blank)	Y	N
	Cheque Amount	Y	N
	Sub Total	Y	N
	Less Cash	Y	N
	Net Deposit	Y	N

Record **Yes** or **No** for each part above.

153. A contest was held to guess the number of peanuts in a jar. Four wrong guesses were made: Sabrina, 163 peanuts; Pierre, 169; Yasmine, 178; and Carlos, 185. One of these guesses was wrong by 1, another by 6, another by 10, and another by 16. How many peanuts are there?

Correct Response: 179 peanuts

1. Response

Record your judgement on the quality of the solution in the row labelled **Response** for Question 153 on the *Mathematics Student Answer Sheet*. The alternatives are **A** through **G** as specified below:

A = Did not attempt the question.

B = Completes the solution correctly using an appropriate strategy.

C = Gives the correct answer, starts an appropriate strategy but does not complete it.

D = Gives the correct answer, but does not show reasoning/strategy.

E = Selects an appropriate strategy, but does not get the correct answer due to a minor (e.g., computational) error.

F = Selects an appropriate strategy and shows understanding, but does not complete the solution or makes a major error in reasoning.

G = Attempted the question but does not show understanding that would lead to a solution.

2. Strategy

Please choose the one strategy which most closely matches the students' work and record it in the row labelled **Strategy** for Question 153 on the *Mathematics Student Answer Sheet.*

A. Did not attempt the question.

B. Attempted the question but does not show understanding that would lead to a solution.

C. Answer only, right or wrong, no work shown.

D. Searching for a pattern.

Example:

The guesses, in order are

163, 169, 178, 185
185 – 163 = 22
6 + 16 = 22

Actual number is 16 from 163 or 185.

Try 179
179 is 1 from 178
179 is 10 from 169

E. Constructing a table and searching for a pattern.

Example:

	Differences From				
	185	178	169	163	
184	1	6	15	21	
183	2	5	14	20	
182	3	4	13	19	
181	4	3	12	18	
180	5	2	11	17	
179	6	1	10	16	* Correct solution

F. Estimating (Guess and Check)

Example:

Try 175

185 – 175 = 10
178 – 175 = 3 **incorrect**

Try 169

185 – 169 = 16
178 – 169 = 9 **incorrect**

Try 179

185 – 179 = 6
179 – 178 = 1
179 – 169 = 10
179 – 163 = 16

179 is the number of peanuts.

G. Using a formula or writing an equation.

Example:

Let the correct number be **x**

185 – **x** + **x** – 163 = 185 – 163 = 22

185 – **x** = 1 **x** = 184
184 – 163 = 21 **incorrect**

185 – **x** = 6 **x** = 179
179 – 163 = 16
179 – 178 = 1
179 – 169 = 10

H. Working backwards.

Example:

Try numbers 1 away from 169 or 178.

168, 170, 177, 179
168 and 179 are possible.
Try numbers 6 away from 163 or 185.
169 or 179 are possible
179 is 16 away from 163.

S. Some other strategy.

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